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LAND OF OPPORTUNITY

—Memorable Spearhead of the War—

has, primarily, the background of abundant subsistence, traceable to the mastering of farm-animal disease in the United States (hog cholera, swine erysipelas, tuberculosis, tick fever, anthrax, and other lethal infections) which has required the planning, the administration, and the operations of a competent profession.

The health of pre-determined quotas of food-producing animals has a new depth of meaning when measured by the lofty heights that the "land of opportunity" has reached among the nations of the world through the determination of the veterinary service to disarm the enemies of animal production by means of science, research, and sound practices.

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Panel Discussion on Brucellosis

Following is the transcript, slightly revised in the interest of brevity, of the panel discussion on brucellosis presented at the Chicago Session of the Association in August, 1944. Dr. W. L. Boyd, chief, Division of Veterinary Medicine, University of Minnesota, St. Paul, presided as chairman.—The Editors.

CHAIRMAN BOYD—We shall refrain from making extensive preliminary statements relative to brucellosis in order that we may cover the field as well as we can in the time allotted. The disease remains an important hazard to the livestock industry of the United States and heavy losses are exacted by it in infected herds of cattle and swine. Also, it is a threat to the health of every brucellosis-free herd of cattle and swine in the nation.

In addition, brucellosis constitutes a highly important public health problem, not generally appreciated, from the standpoint of its prevalence in man. The frequency of occurrence of human brucellosis in many states is now greater than typhoid fever. Twenty-five years ago, it was more or less a curiosity; today, it is common.

The farm people of America are tremendously concerned with brucellosis for they are, from the human health standpoint, the most vulnerable. These people are looking to the veterinary profession to control this insidious disease.

I will now introduce the men who are to participate in the panel: Dr. L. M. Hutchings, assistant, Department of Veterinary Science, Purdue University, Lafayette, Ind.; Dr. C. H. Case,* practitioner, Akron, Ohio; Dr. G. W. Jensen, practitioner, Antioch, Ill.; Dr. Herbert Lothe, practitioner, Waukesha, Wis.; and Dr. R. A. Hendershot, chief, Bureau of Animal Industry, Trenton, N. J.

SWINE BRUCELLOSIS

To get down to business, I shall ask Dr. Hutchings to discuss the prevalence and importance of brucellosis in swine in the United States.

DR. L. M. HUTCHINGS—There are no reliable figures on the exact prevalence of the disease in the United States at the present time. However, considerable data obtained from abattoirs indicate that the incidence is about 1 to 3 per cent in swine going to slaughter. I believe there is little question, among those who have worked with and studied this disease, of its relative importance both to the swine industry and to human health. We know that, in some instances, brucellosis causes no visible damage and no economic loss in swine herds; in other instances, it may prevent the profitable operation of a swine enterprise. The disease is doubly important because it is not only a disease of swine but may be transmitted to cattle and to man.

CHAIRMAN BOYD—How is brucellosis diagnosed in a herd of swine, and what do you consider a diagnostic agglutination reaction?

DR. HUTCHINGS—The method of diagnosis is the standard agglutination procedure used for the corresponding disease in cattle. The diagnostic titer is a moot question at the present time. However, many swine fail to react in a high titer, even though definitely infected, as evidenced by isolation of *Brucella* organisms from the animal body.

*Deceased.

Tentatively, it is the opinion of the workers on brucellosis in swine that, in a herd where there are definite reactors, an animal with a reaction at 1:25 should be considered infected. In herds in which there are no high titer reactors, a 1:25 reaction is not considered diagnostic.

CHAIRMAN BOYD—What are the chief methods by which the disease is disseminated?

DR. HUTCHINGS—Apparently through the infected boar, and at the time of abortion or normal parturition of the infected sow. The chief means is probably the aborting sow, but the boar is an important factor. In our experience, storms of abortion in gilts and sows have occurred only as a result of introducing an infected boar.

CHAIRMAN BOYD—That is an interesting statement. It shows the difference between the disease in swine and in cattle. In the early studies of bovine brucellosis, it was suspected that the infected sire was important in disseminating the disease; however, time has shown that the bull is of comparatively little significance. But in swine, the boar is tremendously important in disseminating the infection.

While we are on the subject of diagnosis, will you tell us the best method of securing blood samples from swine?

DR. HUTCHINGS—The method of choice has been described by Carle and Dewhirst in the JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION for December, 1942, p. 495. Swine of all ages and all sizes can best be bled from the anterior vena cava, using a Luerlock syringe and needle. We prefer an 18-gauge needle. For swine weighing 150 to 200 lb., we use a 2-inch to 2 1/2-inch needle and, for anything over that size, a 3- to 3 1/2-inch needle, 18-gauge.

This method makes it possible to bleed swine at the same rate of speed as cattle, if there is proper help to catch and hold the hogs. In our own case, we are able to bleed swine, tag or identify them, and keep the records at the rate of one hog every 45 seconds. That, I am sure you will agree, is better than ear bleeding or tail bleeding, as done in the past. It is a simple procedure, can be used on all sizes and ages of hogs, and with no perceptible injury.

CHAIRMAN BOYD—The next question concerns control measures. Will you discuss

the control measures, including vaccination?

DR. HUTCHINGS—I will take up the vaccination phase first. Studies on vaccination of swine against brucellosis in Wisconsin and, I believe, at the University of Illinois, indicated that the method had some promise of benefit. However, the efficiency of the vaccination procedure was measured on the basis of percentage of abortions, which, in most cases, we know now is not the criterion to be used.

At the present time, strain 19 vaccine has been rather extensively used under experimental conditions. The work at the Beltsville Animal Disease Station has shown it to be not exactly worthless, perhaps, but certainly not very efficient.

From work done at other stations, notably the University of Minnesota, under field conditions, the conclusions are, I believe, that strain 19 vaccine has no beneficial action in swine.

Studies are also being made of a strain of *Brucella suis*, of low virulence, and of a killed culture of *Br. suis*, the reason for the latter being to avoid the possibility of producing active infection in the animals and, consequently, affecting human health. The results of these studies are not yet available.

In our own experience, vaccination procedures to date seem to hold little promise of benefit, except that they will probably prevent the occurrence of abortions in the herd. But, from the standpoint of preventing actual infection, they have not been very successful.

As to control procedures, an attempt was made, at first, to apply the same measures to swine herds that had been used successfully in cattle. However, these measures proved ineffective. The best chance of success in controlling swine brucellosis appears, at the present, to apply to the breeding animals. Where there is infection in these, the entire herd must be considered as an infected unit, irrespective of the presence in the herd of a few individuals with negative agglutination titers. Isolation or segregation of this infected unit must be carried out and this isolation must be rigid.

Pigs from this infected herd may be weaned from the sows and placed on the cleanest ground available. Then, periodic agglutination tests are conducted on these weaned pigs, up to and during the breeding period.

Only those pigs that have remained consistently negative throughout the tests should be retained for breeding. This procedure, of course, is what we attempt to use in pure-bred herds, where the main enterprise is the sale of breeding animals. In commercial herds, it is my opinion that the most economical course is complete disposal of the infected herd and reentry into the swine business from known, clean sources.

CHAIRMAN BOYD—The next question relates to the localization of *Brucella* organisms in the various body tissues of swine as compared with cattle. Also, please tell us whether or not the disease in swine may be more or less self-limiting.

DR. HUTCHINGS—I will take the latter question first. The disease in swine has been reported to be self-limiting. This apparently is true with respect to the individual animal. However, there are many herds in which the disease continues to exist for many years; in other words, the disease is self-limiting within the individual, but, in so far as the herd is concerned, in the majority of cases, the disease continues even though there are a few individuals in it which return to a negative agglutination status.

With respect to the localization of the organism in the hog, a somewhat different condition obtains than in the cow, in that, after the original exposure to the infection, the hog goes through a period in which the organism, *Br. suis*, may be found in the blood stream for a variable length of time. In our experimental swine, we have found the organism up to fifty-seven days after exposure. This is not true, in general, in the cow. *Brucella* organisms are seldom bacteremic in cattle.

During and after the bacteremic phase in swine, the organism tends to localize in the lymphatic tissues, *i.e.*, in almost any of the body lymph nodes, whereas in cattle, the mammary tissue and the supramammary lymph nodes are the usual sites of localization. Thus, the hog is much more a potential source of infection to man, either in packing houses or when slaughtering hogs on the farm.

CHAIRMAN BOYD—The next question relates to the pathogenicity of *Br. suis* for cattle and conversely of *Brucella abortus* for swine.

DR. HUTCHINGS—*Br. suis* is the only

species of *Brucella* that seems to be pathogenic for the hog. The *abortus* strain does not produce infection in swine, as far as we know at the present time.

However, *Br. suis* will produce definite brucellosis in the cow. How readily this transmission takes place under natural conditions, I cannot say, but we do know that some dairy herds have been infected with *Br. suis*. The most serious epidemics of undulant fever, reported in the United States to date, have been *suis* outbreaks which were milk-borne; in other words, we had the hog to cow to man transmission chain.

In our own experimental work, we have attempted on two occasions to transmit the disease from the hog to the cow by association. In one instance, we used three cattle, two of which were not pregnant; these, of course, were not good subjects for infection. The third animal was a pregnant heifer which calved normally but showed a slight agglutination reaction at one time during her period of cohabitation with the infected swine. After she calved, we were able to isolate *Br. suis* from the fetal membranes of this heifer. Possibly the *suis* strain in the cow does not elicit as high an agglutination response as the *abortus* strain; at least, in this case it didn't.

CHAIRMAN BOYD—May the man on the farm become infected from handling diseased swine?

DR. HUTCHINGS—The answer is, definitely yes. In our experience, we have seen many farmers who have handled infected hogs and have contracted brucellosis as a result. Probably the greatest danger is at farrowing time. However, Dr. Jordan, of the Iowa State Health Department, emphasizes the importance of *friction* in *suis* infection of man. In other words, the handling of pigs, sows, gilts, and boars on infected farms may result in infection, according to his observations.

CHAIRMAN BOYD—Thank you, Dr. Hutchings. This concludes the questions on swine brucellosis with the exception of those that may come from the floor, if we have the time.

BOVINE BRUCELLOSIS

Now we will consider cattle brucellosis. Most of the questions submitted have to do with vaccination as a means of controlling the disease. We think that that

is timely because, right now, the veterinary profession is vaccination-minded, generally speaking, and so is the farming public.

Is vaccination something new as a means of controlling bovine brucellosis? No, indeed, for if we review the literature, we find that efforts to immunize against this disease were made more than forty years ago. It was not many years ago that we were enthusiastic over the progress supposedly being made through the use of bacterins. Then, a little later, after we found that bacterins were of little or no value, we used virulent cultures which, when introduced into young females that were nonpregnant or just prior to breeding, apparently reduced the number of abortions. If measured in terms of "abortions", then we did, perhaps, reduce one of the effects of the disease but not to the desired minimum. Then, we regretted to find that we were establishing carriers, many carriers, through the use of these virulent vaccines.

Later on, another *abortus* organism known as strain 19 was isolated in the laboratories of the federal Bureau of Animal Industry by Doctors Buck and Cotton. This organism was unusual in that it had antigenic properties but very little virulence for cattle. When introduced into young heifers, it apparently gave them a high degree of resistance.

As time went on, the vaccine was shown to be more and more successful in calves. Finally, after further laboratory and field trials, the Bureau of Animal Industry, in 1940, recommended calfhood vaccination as an adjunct to other accepted methods of control of bovine brucellosis.

The Bureau did not recommend that calfhood vaccination take the place of all other control measures, but approved it as a supplement to other types of control. I think we should keep that in mind in the discussion—that calfhood vaccination, which has been taken up by so many states and has been expanded so much within the last few years, is recommended and was originally recommended as a supplementary form of control rather than as a substitute for the other methods.

We think that we know most of the basic facts about brucellosis, but we still have a great deal to learn from research.

We still have questions, however, of a

basic nature. Dr. Case, what is the incubation period in brucellosis?

DR. C. H. CASE—The incubation period is often neglected in discussing brucellosis with the owner of dairy cattle, and as a result he does not know what to expect. For instance, he buys a cow at a sale; her blood test is negative but she has been exposed; he brings her home. After a time, say from two to eight months, she may become a reactor and infect his herd at calving time. It should be explained to dairymen, that the period of incubation as revealed by the blood test may be from about fifteen days to eight months.

CHAIRMAN BOYD—By what means can one eliminate brucellosis from a large herd from which many reactors have already been removed?

DR. CASE—I am sure it is possible to clean up any herd by repeated testing, elimination of reactors, and strict isolation measures. For example, a herd of 400 cows was presented to me several years ago from which 60 reactors had been removed in one year. The cattle were kept in the barns for eight months, except for exercise on halters, so that they could not come in contact one with another; the cows freshened in a separate maternity barn. Blood samples from both the calf and the cow were taken after each freshening. By repeated monthly tests, in eight months, we took out 35 more reactors. Every cow that showed a clear-cut reaction at only 1:25 was separated from the herd at once, and only one cow that reacted at 1:25 ever went back into the herd. All reactors at 1:25 eventually became strong reactors. By that method, we cleaned up the infection and we had no more reactors after eight months.

We tested that herd every month with the result that we soon had an accredited herd which remained accredited for eight years, when it was sold.

CHAIRMAN BOYD—What is the correct control method to follow in infected herds where the calves are to be vaccinated with strain 19?

DR. CASE—Before we vaccinate any calf, it is blood tested to determine whether it is negative or positive. Surprisingly, quite a number of calves are positive prior to vaccination.

After the calves have been vaccinated, they are retested the following month to

determine if a positive blood reaction has developed as a result of the vaccine. Some calves are found to be entirely negative a month after vaccination, whereas, they should become positive. We only vaccinate calves in badly infected herds.

CHAIRMAN BOYD—Dr. Case, should strain 19 vaccine be used in herds that are brucellosis-free?

DR. CASE—I don't think so under any conditions.

CHAIRMAN BOYD—Should aged cows be vaccinated, and should bulls be vaccinated?

DR. CASE—From such scientific knowledge as we now have, there is nothing, in my opinion, to justify vaccinating an aged cow. When aged cows are vaccinated, 50 per cent of them will be found positive two years afterward; and five years after, 20 per cent at least are still strongly positive, in our experience. As to bulls, we have never vaccinated one. I know of one instance in which a bull was vaccinated and developed an orchitis; he was castrated, and strain 19 Brucella organisms were recovered from one testicle.

CHAIRMAN BOYD—How often should cattle in infected herds be blood tested?

DR. CASE—In our experience, once a month. Things may happen in a herd where there is acute infection, so we believe that once a month cattle that react at 1:25 should be removed. If such cattle, plus partial reactors at 1:50, are left in the herd, something may happen, and more cattle will be infected.

If cows with 1:25 reactions are taken out and put in quarantine, you will clean up herds much faster than any other way.

CHAIRMAN BOYD—What per cent of heifers that are vaccinated as calves and then permitted to associate with known infected cows will, when pregnant, abort or give off the organism in the fetal fluid at the time of calving?

DR. CASE—I have only one report of heifers which were vaccinated, were bred and became pregnant, and were then put in a pasture with several positive cows. Twenty-five per cent of these heifers either aborted or showed live Brucella organisms in the placental fluid at the time of freshening.

CHAIRMAN BOYD—Dr. Jensen, can the veterinarian effectively control bovine brucellosis?

DR. JENSEN—Yes, any veterinarian can effectively control brucellosis, but only by the diligent application of our present knowledge of the disease and by the judicious use of the weapons provided by scientific research. Every herd must be studied and treated individually. The control methods used in areas where herds are small and widely separated will not apply in areas where herds are large and in close proximity.

CHAIRMAN BOYD—What, in your experience, are some of the outstanding characteristics of this disease that tend to make effective control by means of the agglutination test extremely difficult?

DR. JENSEN—Bovine brucellosis is a chronic, insidious, yet often erratic disease that may spread rapidly. The incubation period may be comparatively short, as Dr. Case stated, from fifteen days up, or it may be long, just how long we do not know. An animal may be exposed, infected, and become a spreader before it can be detected by the agglutination test.

Recently infected animals are the most dangerous because, very often, they are not detected in time to prevent exposing healthy animals. Some animals apparently carry a latent infection, show no agglutinins in the blood serum, and yet in these same animals, we may be able to isolate Brucella organisms. On the other hand, there are positive animals in which, by the most careful laboratory examinations, such as animal inoculations and cultures, no active infection can be disclosed.

CHAIRMAN BOYD—From your experience, what points would you stress as essential to greater improvement in future efforts to control bovine brucellosis?

DR. JENSEN—In order to retain our present gains and make more rapid ones, I believe that herd tests must be made more frequently. The rapid test antigen must be of good quality and carefully standardized. The antigen is the key to the whole situation. It is the yardstick by which we measure the extent of the infection in a herd, and this yardstick should not vary.

It is essential that the state exercise more effective control over known reactors, over the sale and traffic in untested animals, and over the movement of animals coming from infected herds.

Additions to herds have been our greatest problem and are usually the most fre-

quent cause for infection being introduced into healthy herds. The livestock sanitary authorities of the states have not usually recognized their responsibility in this respect. To give cattle breeders and farmers adequate protection, proper sanitary regulations should be enacted by the various states, and these regulations should be made uniform in order to avoid confusion, both for practicing veterinarians and cattle owners. The many ways by which brucellosis may gain entrance to a herd should be thoroughly taught to herd owners.

It is essential to recognize and employ effective sanitation in herds at all times. The promiscuous sale of antigen should be discontinued. At present, there are unauthorized "schools" which teach the rapid test for brucellosis. As long as test antigen of unknown or doubtful quality is sold to anyone who wishes it, brucellosis-accredited herds will not command the respect that they deserve.

It is essential that we not rely solely on one method of control; no proved method should be ignored. We should recognize the value of calfhood vaccination as the cornerstone for building immune and, eventually, negative herds. The vaccine must be fresh, and must be kept refrigerated; it should be supplied in single 6-cc. dose vials.

The veterinarian himself has a real responsibility for the improvement of brucellosis control. His responsibility, in one respect, lies in making prompt reports of all tests and vaccinations. His state may have certain regulations that he may not wholly approve, but the veterinarian does not make these regulations. He may recommend modifications that will be advantageous but, in any case, he should live up to the state regulations and make the required reports.

Coöperation between the herd owner, his veterinarian, and the official agencies is absolutely necessary to carry the program to a successful conclusion.

CHAIRMAN BOYD—Will you speak, more in detail, relative to sanitation?

DR. JENSEN—Sanitation is an important phase of brucellosis control and is usually not emphasized sufficiently. We must explain to the herd owner why sanitation is necessary and why we must have his complete coöperation.

The owner of the negative herd must be shown that sanitation is his only safe-

guard, that the health of his herd lies in his own hands. The owner of vaccinated calves and cows must understand that sanitation is still necessary to protect the partially immune animals from being overwhelmed by repeated exposure to infection. The owner must maintain clean, well-lighted stables, with frequent disinfection, and clean yards. He must use clean, uncontaminated feed bags; cattle trucks must be kept clean and disinfected, and must not be used in hauling feed.

Negative herds should be retested frequently and, if any reactors are found, they must be immediately disposed of or completely isolated. All additions to the herd must also be isolated until such animals have passed negative tests after freshening.

Clean, regularly disinfected box stalls for maternity purposes are essential. By a maternity stall, I mean one that is entirely closed on all four sides, the walls being made of impervious material that can be cleaned and readily disinfected. I think many cattle are infected with brucellosis by means of tiny droplets of infectious material getting into their eyes from the switching of a cow's tail which has been contaminated with discharges at calving time. The only way to stop this is to provide maternity box stalls with high walls that are completely tight.

Pasture infection is a primary source of danger. Water holes and mud holes must be fenced off or drained. Contact with swine and horses affected with poll-evil and fistulous withers must be prevented.

The veterinarian himself must be careful in going from one farm to another. He must provide himself with clean boots and clothes so that he does not carry infection.

CHAIRMAN BOYD—Do you believe, Dr. Jensen, that the vaccination of adult animals is of value in controlling bovine brucellosis?

DR. JENSEN—Yes, I believe that vaccination of adult animals has proved of considerable value, but I also believe that, before vaccine is so employed, a thorough study of the herd should be made. The blood test picture, history of the herd, sanitary surroundings, and management should be carefully considered by the veterinarian in charge. I do not believe in the indiscriminate use of vaccine in negative herds or in herds in which the disease is in the

quiescent stage. The proper handling of the herd in which the disease has only recently appeared presents, perhaps, the most perplexing problem.

CHAIRMAN BOYD—What about the intradermal method of vaccinating adult cattle?

DR. JENSEN—By intradermal vaccination of adult animals, we feel that we get a better immunity and we get a reaction titer that clears up more quickly. We have not done a great deal of this work, but we feel that it has possibilities.

The cattle are vaccinated with 1 cc. in the skin of the neck. Our results show that, one year after vaccination, about 20 per cent of the cows still show positive reactions and 17 per cent incomplete reactions. More research should be done on this method.

CHAIRMAN BOYD—I am glad to hear that latter statement, with which I thoroughly agree. We do need further research; there should be more money spent on brucellosis research.

Do you feel, Dr. Jensen, that in the vaccination of adult cattle the veterinarian should determine whether or not the animals are pregnant and, if so, the stage of pregnancy?

DR. JENSEN—The veterinarian should have a complete herd history. If there is any doubt, he should make rectal examinations of the cows and determine their stages of gestation. We vaccinate cows up to the fourth month of pregnancy. There has been no difficulty with abortions by so doing. We have had a drop in milk flow in about 10 to 20 per cent of the cows, which lasts about forty-eight hours, but it quickly returns to normal.

CHAIRMAN BOYD—Dr. Lothe, is the test and slaughter method of control, with indemnity, economically and scientifically sound in a herd of cattle suffering a so-called abortion storm?

DR. HERBERT LOTHE—In such herds, the test and slaughter method, with indemnity, is not only economically unsound but it is also scientifically unsound. In some of these problem herds, the repeated testing and removal of reactors eventually takes practically the entire herd. Herd additions must be made if the milk production is to be maintained and, instead of controlling the disease, it is really being propagated because the negative, uninfected animals brought into the infected environment soon become positive.

CHAIRMAN BOYD—Has the use of strain 19 vaccine in adult animals any value in such a herd?

DR. LOTHE—It has a definite value. I have yet to see a herd that was going through an abortion storm that was not benefited by the use of strain 19 on adult animals. It seems to take the edge off the infection, and the herd quiets down in a much shorter period than by any other method.

CHAIRMAN BOYD—Is it advisable to use strain 19 on adult animals in negative herds which are experiencing no trouble either from abortions or positive blood reactions?

DR. LOTHE—I consider that strain 19 should not be used on adult animals under such circumstances.

CHAIRMAN BOYD—Is calfhood vaccination advisable in such herds?

DR. LOTHE—I believe that calfhood vaccination should be practiced in negative herds, especially in sections where the incidence of brucellosis is high.

CHAIRMAN BOYD—And do heifers that are properly vaccinated with strain 19, between 4 and 8 months of age, sometimes abort due to *Brucella* infection?

DR. LOTHE—If they are exposed to heavy infection during pregnancy, some of these animals will abort. I recall one instance in which heifers were vaccinated between 4 and 8 months of age; when tested two months later, they had strongly positive post-vaccination titers but, a year later, some of them had become completely negative. These heifers aborted their first calves, and then again became strongly positive, but in the meantime, they had been exposed to virulent herd infection from older, aborting animals.

CHAIRMAN BOYD—Has the use of strain 19 intradermally any advantages over the subcutaneous inoculation?

DR. LOTHE—I have used it very little, but the main advantage, in my opinion, is that post-vaccination blood reactions clear up much more quickly than when the subcutaneous method is employed.

CHAIRMAN BOYD—Does the intradermic inoculation produce a resistance higher or lower than that produced by the subcutaneous route? Is there anyone at the table who would care to answer that question?

DR. JENSEN—The only answer seems to be the fact that intradermic vaccination produces a higher agglutination titer. From

experiences in the control of other diseases, it appears that cutaneous inoculation is more effective than subcutaneous as, for example, in equine encephalomyelitis. In treating cattle for warts, my results with wart vaccine subcutaneously were very poor, but by vaccinating intradermally, I obtained excellent results.

DR. HUTCHINGS—From the strictly theoretic standpoint, intracutaneous injections have, in many instances, produced a greater immune response.

CHAIRMAN BOYD—Dr. Hendershott, we have a short time in which you might comment on and summarize the subject matter presented here this morning.

DR. R. A. HENDERSHOTT—I think that the subject has been well covered. I subscribe to Dr. Case's statement that, if we desire to control brucellosis, it can be done without the use of crutches or canes.

One of our New Jersey institutional herds, containing 285 head of animals, was accredited for a period of about eight years. An animal introduced into the herd brought brucellosis with it, and a storm of reactions and abortions followed. Unfortunately, in this institutional herd, we did not have adequate maternity facilities because, up to that time, we had little or no need for them, at least so the institution authorities thought.

A lot of pressure was exerted to employ adult vaccination in this herd. I resisted it for fear it might serve as an example to others of what they would have to do in order to control bovine brucellosis in their herds. We elected to eradicate the disease without the use of strain 19 vaccine. We provided maternity stalls such as Dr. Jensen has described, with the exception that our stalls had an open front.

One herdsman was assigned to look after the maternity barn, and was charged with the necessary sanitary routine that must be followed in going in and out of the stalls. One wing of the barn was set aside for the isolation of reactors. At the height of the disease incidence, there were 76 positive animals isolated in that wing.

It was kept locked, and attendants were assigned to look after that fraction of the herd. There was a common hayloft, but the man who went into the loft to throw down hay was required to put on a pair of clean overshoes.

Within two years, the manager of the institution was asking that we decrease the

number of reactors in the isolation barn in order to make room for freshening, negative heifers. Finally, though we were experimenting with the reactors, we placed a partition midway of that isolation wing, dividing it and turning over half of it for negative cows. Within three more months, the partition had to be moved again and the remaining reactors reduced one-half. Today, there are no reactors in that herd, and there have been none for two years.

In this herd, we were interested in finding out why an animal with a slight reaction would, occasionally, be found. Quarter samples of milk were taken from each cow and cultured for Brucella. We found one animal which, though not showing a reaction, was shedding Brucella organisms from two quarters of her udder. She was immediately disposed of and, since then, we have had no further difficulty in the herd.

Dr. Jensen made an important point, in my opinion, relative to sanitation. This is rather a strong point with me and even our herd owners are becoming more and more critical of any individual who enters their premises without taking adequate precautions against the introduction of disease. Our men are provided with foot-tray disinfecters and are instructed to disinfect their shoes when entering and before leaving the premises they visit. This is an added task for the veterinarian, but it pays dividends. As professional men, we have a moral responsibility not to do things that will introduce infections on the farms we visit and where the results of carelessness may jeopardize the health of farm flocks or even ruin the economic situation of a herd owner. As veterinarians, we are expected to be sanitarians. We were so trained and we should do nothing that would lead to criticism in this respect.

With regard to the intradermal method of immunization, we have been interested in this method in New Jersey and are using it almost entirely.

From the theoretic standpoint, as pointed out by Dr. Hutchings and Dr. Jensen, the literature on tissue immunity indicates that the dermal tissue or epithelial tissue responds best to immunologic stimuli.

We have run opsonic index studies in conjunction with our agglutination reactions to strain 19. Opsonins seem to appear in the blood stream following intradermic inoculation at the same time as they do following subcutaneous vaccination.

However, the agglutination titer has a tendency to be higher with the intradermic than with the subcutaneous method.

Relative to the duration or degree of immunity that is conferred by using vaccine intradermally, that answer will only come with time. It has required many years to learn something about strain 19 through subcutaneous administration. We can hardly hope to get the answer on the intradermal route in any shorter period.

The unrestricted sale of antigen has been a problem for a long time. It is all well and good to call that to our attention; it is all well and good to exhort the livestock regulatory official to do more than he has done in controlling the sale of these products, but it must be realized that, as long as the Great Father in Washington licenses biological houses for the manufacture of these products, and that same Great Father in Washington serves as the messenger boy for the delivery of those products into the hands of people in the various states, without informing anyone relative to their effects, there is little to be gained by exhorting the livestock regulatory officials to control the situation. They cannot control it. We might just as well face facts.

If the men in the veterinary profession and in the livestock industry are actually sincere about this, then we must have proper legislation so that adequate information will be given to the livestock regulatory officials on which they then may be able to act. With respect to the administration of vaccine in adult herds, is it ever justified? In New Jersey, we have, for the last year and a half, enlarged our program so that animals of all ages may be vaccinated, under certain conditions. We have a questionnaire that must be filled out on each herd before it is placed under state supervision. It inquires as to whether or not the herd owner grows all his replacements or only part of them; whether abortions have occurred in the herd during the last twelve months. If so, were the abortions "uncontrolled" or "controlled," that is, did they occur in the pasture or in the barn? What sort of farm equipment does the herd owner have?

We also have a questionnaire for the veterinarian to fill out, with respect to what we call the "Bang-mindedness" of the herd owner. We want to know whether we can receive from him and his employees full

cooperation. This point is most important in determining the kind of program that is to be recommended. The farmer may have ideal conditions on the farm, but if his barn help has little or no regard for the fundamentals of farm sanitation, and do not believe in the control of brucellosis, then all efforts will be in vain.

We then sit down with the owner and discuss with him what, in our opinion and experience, seems to be the plan that best fits his needs. Obviously, as brought out by Dr. Lothe, if you have a herd that is maintained through the purchase of adult replacements which is going through a storm of abortions and reactions and you endeavor to put on a test and slaughter program, that is not brucellosis control; it is just foolishness; it means perpetuation of *Brucella* infection in that herd. Each herd must be carefully evaluated.

I think, too, that although we may start an adult vaccination program in some herds, we should always keep in mind that we have a goal, and that goal is freedom from reaction and freedom from infection in the herds under supervision.

CHAIRMAN BOYD—We would like to have a question or two from the floor before we close.

QUESTION—I would like to ask about the intradermal method of testing cattle for brucellosis.

DR. HUTCHINGS—The intradermal diagnostic test seems to hold some promise. Discrepancies, however, do occur when the intradermic test results, at the present time, are compared with the agglutination test. I can speak more freely from the results in swine than in cattle. We are trying the intradermal test in swine in the hope that we will have a more specific diagnostic agent than the agglutination test provides. I am not condemning the agglutination test, but we do know that discrepancies occur by which known infected individuals fail to show an agglutination reaction. In our experience to date, many of those discrepancies are avoided when the intradermic diagnostic test is used.

QUESTION—The question was raised as to the pathogenicity of strain 19 for human beings. In the July issue of the *Cornell Veterinarian*, there is an article by Dr. Gilman bearing on that particular subject. Dr. Gilman is in the audience and I suggest that he tell us about it.

CHAIRMAN BOYD—Dr. Gilman, you have my invitation right now.

DR. HERBERT L. GILMAN (Ithaca, N. Y.)—For those of you who did not see the article in question, there was a student in the veterinary college at Cornell who, while vaccinating a heifer, accidentally sprayed some strain 19 vaccine in his eye. He washed the eye out rather thoroughly, he thought, and gave no further consideration to it until sixteen days later when he showed the early symptoms of grippe or possibly undulant fever. Later, it proved to be undulant fever, a typical case, and we recovered strain 19 organisms from his blood. There were no particular features about this case except that it was typical, the incubation period was sixteen days, it cleared up quickly, and the patient suffered no ill effects from the disease. This was a typical case of undulant fever caused by strain 19 organisms and contracted through the vaccine getting into the eye. Maybe that doesn't occur often, but it did occur in this case, and it teaches us that strain 19 is capable of causing undulant fever in human beings. How often this may occur is another question. I believe we should be infinitely more careful than we have been in the handling of the vaccine, both with respect to the possibility of infecting ourselves, other individuals, and animals, by careless disposition of the vaccine.

QUESTION—I would like to ask if there is any danger of transmitting brucellosis through feed obtained from commercial feed houses.

DR. HENDERSHOTT—I think there may be

a great opportunity for the spread of all types of infections if the practice of sending used and soiled feed bags back to the mill is followed. One thing I neglected to say, and I certainly cannot leave this rostrum without bringing this to your attention, in those herds where you employ vaccination of adult animals, and where you permit either virulently infected adult animals or reacting animals, resulting from vaccination, to remain in the milking line, be absolutely sure that that milk is properly pasteurized. We hope that will answer all of the questions, but we are fearful that it will not.

CHAIRMAN BOYD—I wish to thank each member of the panel. I also want to thank Doctors Elder and Graham who are the officers of this section.

Bovine Mastitis

The medicinal treatment of infected quarters is manifestly subordinate to sanitary measures and the order of milking in the control of bovine mastitis. Treatment of the infected quarters speeds up the elimination of the disease from the herd largely by preventing the spreading of the infection as the milk becomes normal. The improvement, however, is only temporary unless the sanitary measures are continued. Correct diagnosis is imperative and pasteurizing of milk fed to calves will reduce the incidence of mastitis when they become heifers.—R. A. Packer, D.V.M. in the Iowa Veterinarian.

If War Bonds do not appeal to you as an investment, give a thought to what you'd have if Hitler "took over."

The Poultry Situation

In November, the USDA published the following production record and the 1945 goal for the information of the poultry industry:

	1935-39 Average	1944 Indicated	1945 Goal
Hens and pullets	364,400,000	515,000,000	420,000,000
Total chickens	664,400,000	745,800,000	700,000,000
Broilers	69,700,000	213,000,000	213,000,000
Total turkeys	27,000,000	35,666,000	35,666,000

These figures show that the 1945 goal for hens and pullets is 82 per cent of the 1944 production; for chickens, 94 per cent; and that the goal for broilers and turkeys equals the production of 1944.

Proposed Pattern for Poultry-Meat Marketing

Concept of a Needful Sanitary Reform

EDWARD M. LYNN, D.V.M.

Chicago, Illinois

THE KILLING, dressing, and drawing of live poultry for immediate use is, by and large, a thing of the past in the United States. The bulk of market poultry comes to the consumer through the retailer in the form of so-called dressed poultry, that is to say, bled and plucked, but otherwise entire. The head, the legs, and the internal organs are left with the carcass, unmolested in order to frustrate putrefaction while in the lanes

the vicissitudes of transportation, cold storage, and final disposal to hotel, restaurant, or home by the jobber or retailer.

IMMEDIATE EVISCERATING IMPERATIVE

Granted that prompt evisceration of the slaughtered animal is the prime sanitary essential of the meat trade, the critical hygienist, and especially the meat-food expert, looks askance at the mounting use

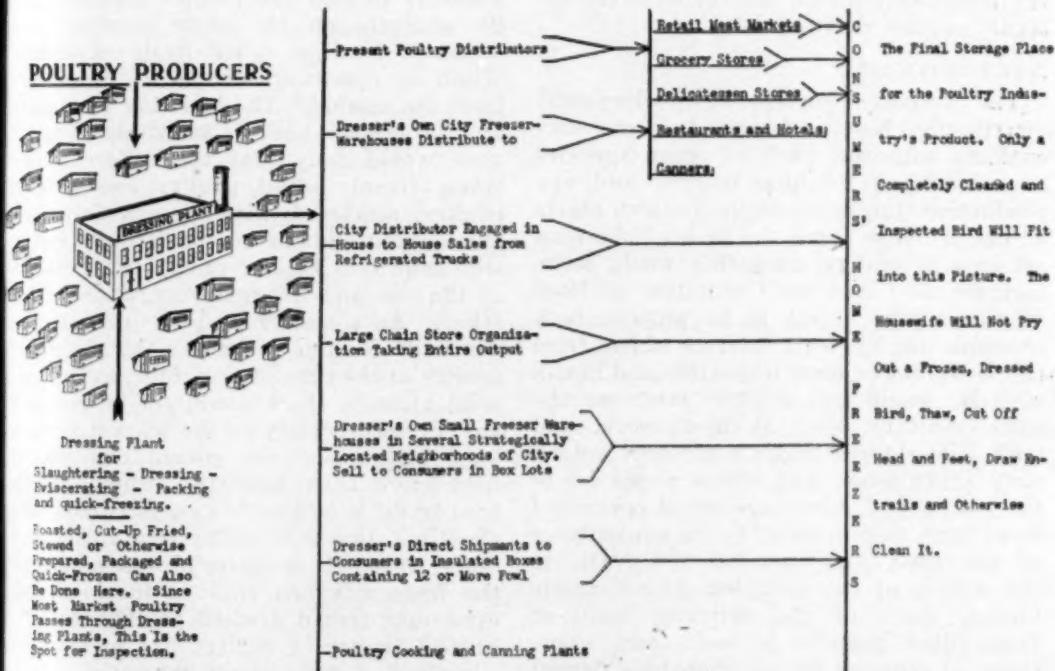


Fig. 1—Illustrating in a general way the future trend in the marketing of dressed poultry.

of distribution between the dressing plant and final destination. According to the interval between dressing and cooking, which may vary from hours to months, the de-feathered carcass has to be chilled, refrigerated, or frozen for its journey through

of uneviscerated fowl by the American people, yet, for long, no steps were taken to solve the problems involved in changing the established custom. Preventing the deterioration of flavor and taste, of wholesomeness, and of the nutritive value of these many tons of needful food is the objective.

Customarily, the poultry industry leaves the unpleasant job of eviscerating to the

This is a special article by Dr. E. M. Lynn, member of the A.V.M.A. Special Committee on Food Hygiene. Published with the approval of the Committee and the Board of Governors (Committee on Journal).

chef or housewife, or to the retail butcher whose otherwise clean hands get soiled with the latent bacteria of the carcass while filling orders for other meats. Summed up, if meat hygiene continues to be an issue of this period, dressed poultry is out of step with human progress. In the long run, there can be no evasion of the reform since, unmistakably, the public has become keenly aware of the difference in safety and nutritive value between pure and tasty food and the spoiled and tainted kind, even though the latter may not be actually disease-producing. On the economic side is the prospect of increasing consumer demand for poultry by selling it ready-to-use—raw, cooked, whole or cut. In short, a sharp upsurge in consumption is a reasonable prediction for quality poultry launched into the market with the internal organs removed.

NOT CONFLICTING

The proposed pattern of poultry-meat distribution herein described in no way conflicts with the work of other agencies or committees touching poultry and egg production. Inasmuch as the pattern starts at the dressing plant, the task of planning reforms in poultry marketing would seem, logically, to fall to the Committee on Food Hygiene. The object is to propose both economic and hygienic reforms which, from the viewpoint of meat inspectors and health officials, would put poultry meat on the same sanitary level as beef, pork, and lamb, slaughtered under competent veterinary supervision, and which would be to the commercial advantage of all concerned from farm to consumer, to the convenience of the cook, and last but not least, to the delight of the gourmet. As previously hinted, much of the delicious taste of fresh-killed poultry is lost (and sometimes is replaced by an obnoxious flavor) by letting the viscera sojourn in the carcass indefinitely. The writer feels that the absence of critical examination of the splanchnic organs by competent technicians at the time of slaughter is an outstanding fault of the dressed poultry trade and marvels that no systematic measures have been taken to correct it.

ANTEMORTEM INSPECTION INADEQUATE

Although over-all antemortem inspection of abattoir animals has its place in food hygiene, postmortem examination is para-

mount in removing unfit meat from the market—a step beneficial to stockman, dealer, and consumer, since it builds up confidence and security in the product marked “inspected and passed.” No segments of the poultry industry can well afford to discount the generally known fact that the condition of the viscera at the time of slaughter furnishes the clue for the apprehension of noxious agencies in the rest of the carcass, nor that retained viscera impregnate the carcass with objectionable flavors. The growth of the meat and dairy interests in recent years are examples of augmenting confidence and increasing demand for meat and milk through scrupulous inspection and sanitary handling, without altering taste and nutritive value.

The far-cry of the nutritionist and health officer is to help the poultry industry put its products on the same sanitary and economic level as other foods of animal origin by removing noneviscerated poultry from the market. The handling of poultry on a large-scale basis is relatively new, yet none would deny that the difference between freshly killed poultry and dressed poultry, marketed with viscera intact, is outstanding and the reason is quite generally known to be the prompt evisceration of the one and the nonevisceration of the other. As a matter of fact, were it economically feasible to remove the viscera of poultry at the time of slaughter, as in other meat animals, there would not be much, if any, dressed poultry on the market because taste and appearance govern demand for food more than nutritive value. In the food trade, it is wise to associate looks with appetite. Dressed poultry is a nuisance in other ways. It is wasteful and messy for the housewife and chef to thaw out and eviscerate frozen dressed poultry, and the critical canner of poultry has to maintain a trained staff to reject carcasses capable of tainting the finished product. Moreover, the housewife is startled at pathological organs; and the brands of the careless canner lack the popularity of the one who maintains a meat-inspection service.

CHANGE AN OBLIGATION

It is, therefore, an obligation of hygienists to aid the poultry industry in its dressed poultry dilemma by outlining an economical means of eviscerating poultry at the time of slaughter. May it not, then,

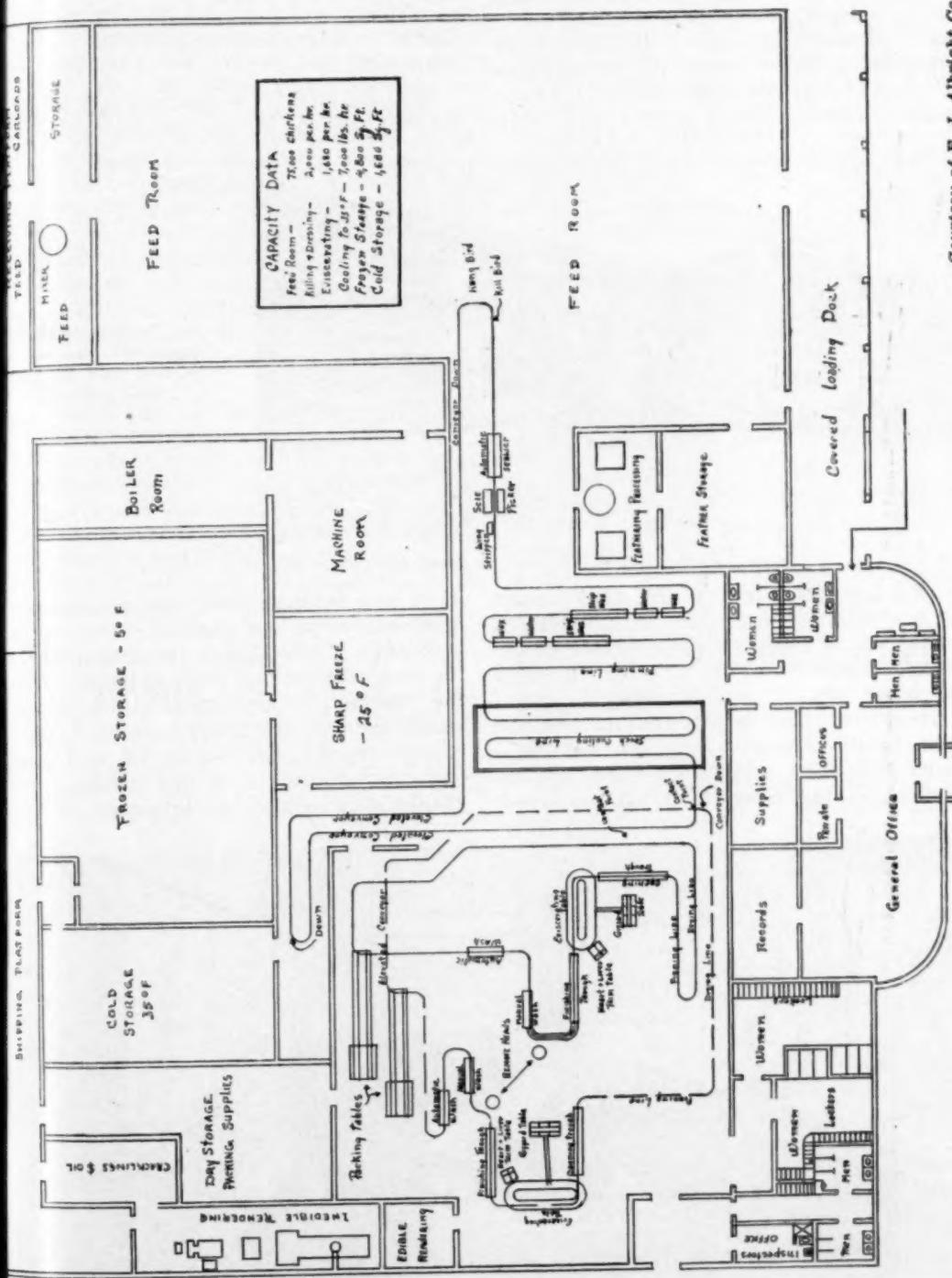


Fig. 2.—Plans for poultry plant—slaughtering, dressing, eviscerating, pecking, and quick freezing, one continuous operation. —Courtesy of E. J. Albright Co.

be the task of this committee to plan a veritable renaissance touching every facet of poultry marketing from the dressing plant, where live poultry is delivered, to the consumer's kitchen—a plan which admittedly includes continuous preservation of an extremely perishable carcass? Drawn poultry remains edible only a few hours

That veterinary science, standing as it does in the rôle of referee, will be brought into the scene is inevitable.

REVOLUTIONARY TRANSFIGURATION REQUIRED

Writing from some thirty years of personal experience in the wholesale and retail



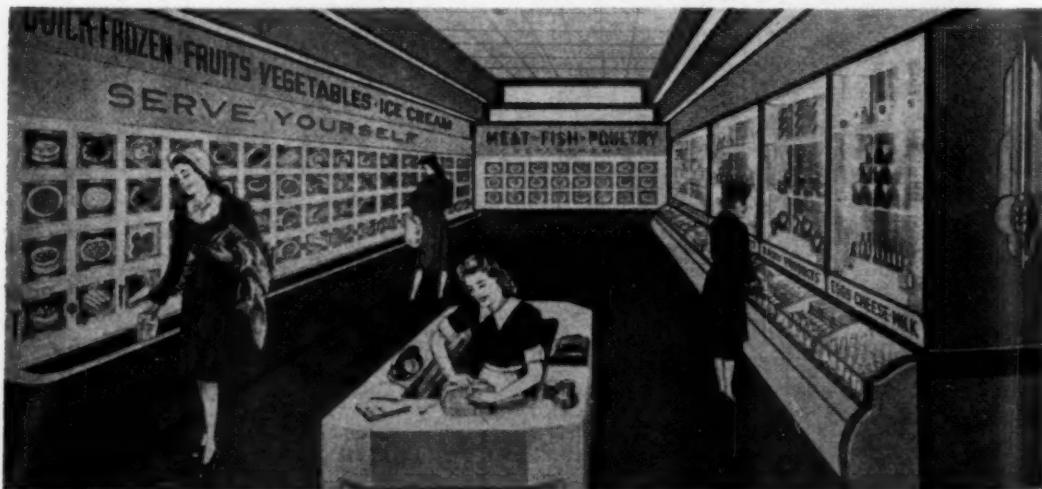
Fig. 3—Refrigerator trucks will play an important part in future food deliveries.

—Courtesy of Quick Frozen Foods and the Locker Plant

unless promptly frozen and kept frozen until cooking time. The only exception would be the poultry that is cooked immediately for canning or that freshly killed for home use.

It is clear that sooner or later poultrymen, health officers, hygienists, and dietitians will take steps to abolish dressed poultry in the interest of all concerned.

meat and poultry trade, along with some meat-inspection and grading experience at both ends of the period, the magnitude of the task of removing dressed poultry from the market is not underestimated, nor should there be any misgivings that a great reform in the distribution of that huge quantity of food is in the making. The change will require revolutionary changes



—Courtesy of Refrigeration Corporation of America
Fig. 4—The self-service food store of the near future.

in a gigantic, going industry of the big business class—the marketing of America's immense poultry-meat crop—and the education of both the public and that industry as to the advantages of the reformation.

Although the changes to come will all stem from the simple matter of eviscerating poultry at the time of slaughter, success hinges on the re-equipment of the hundreds of dressing plants at one end of the journey and the installation of thousands of freezing units at the other end, that is, in the home, hotel, restaurant, grocery, delicatessen, cold storage warehouse, or any place where the finished product halts on the way. While all this seems audacious, it is not a dream. The stage is already set for compliance with every detail.

The change in the marketing of such a huge tonnage of meat food, in view of the vast industry and the important sanitary problems involved, is of considerable concern to the veterinary profession, remote as the marketing of poultry has been in its inner councils. Figure 1, outlines a pattern based upon a casual but quite general survey of the situation.

COOPERATING INTERESTS

The first obstacle to surmount, and the greatest but least developed, is providing dressing plants all over the country with economical equipment for killing, dressing, eviscerating, inspecting, packing, and quick freezing of the poultry received alive. The blue print for this purpose (fig. 2) shows equipment that dressing plants will need to install in order to supply demands for this type of product. None, we are assured, will be slow in entering into competition with the big plants when the cost of equipping permits. The former belief that only the larger plants can afford equipment to start eviscerated poultry on its way through the markets is no longer true.

Next in importance are the manufacturers of freezing cabinets of variable sizes and costs, who are already planning the required production schedule and producing a limited number of trial units. The models illustrated herewith are being widely acclaimed. Quoting one manufacturer: "Everybody will have a home freezer as soon as the war is over." The rapid installation of freezers at retail stores leaves nothing undone to completely revolutionize

the marketing of ready-to-use poultry, except the more general ownership of home freezers, and this should be no deterrent in the face of the refrigerator consciousness now so widely developed through experiences with community locker plants. The objective and manifest trend is to see that the housewife can bring home (for example) a package of frozen eviscerated broilers for use as needed from her own freezer.

It should be obvious to the poultry and meat industry that this home freezer be

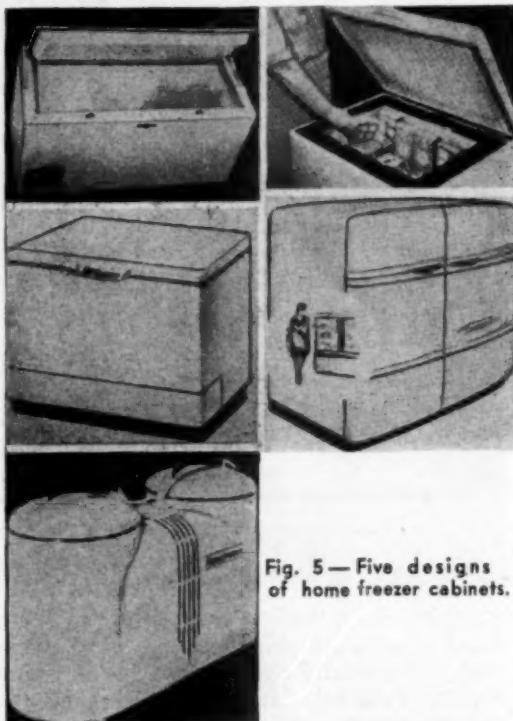


Fig. 5—Five designs of home freezer cabinets.

—Courtesy of Quick Frozen Foods and the Locker Plant

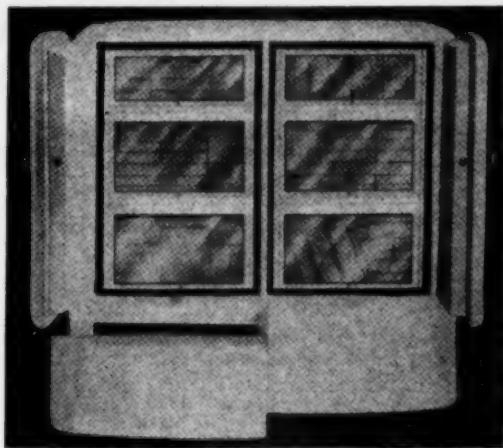
large enough to store sizable amounts of their products in standard, trade-size boxes, otherwise the utility of the home freezer is lost as the housewife with a too-small unit will still be compelled to run for replacements in hand-to-mouth fashion. The difference in cost of operation is nil. In fact, a large unit with contents frozen maintains a low temperature that is more even.

Meanwhile, minds must be turned toward the matter of inspection by capable technologists at the time of slaughter. Whether the veterinary profession will follow the

trend and prepare to render that service is a reasonable question to ask. Obviously, someone familiar with the relation of disease to the wholesomeness and safety of meat will be employed. In addition to their basic training, the veterinarians of the future should be provided the opportunity to specialize in food hygiene, in view of the revolutionary change predicted in the marketing of poultry meat.

INTERESTS TO APPEASE

That there are interests to appease and educating to do is self-evident. The retail butcher and the labor unions may object



—Courtesy of Quick Frozen Foods and the Locker Plant

Fig. 6—A home freezer.

and, obviously, there is coöperation to bring about among government and state agencies, independent and coöperative dressing plants, railroads and truckers (fig. 3), manufacturers of poultry-dressing equipment, community locker plants, jobbers and retailers, the veterinary profession and the consuming public, all of which will be affected by the proposed transfiguration. The increase in the number of eviscerating plants, increasing the capacity of the large plants, the growing popularity of ready-to-use poultry, and the success attained by the Veterinary Corps of the Army in the handling of eviscerated poultry, are becoming matters of common knowledge.

REFLECTIONS FROM WITHIN THE INDUSTRY

From the Chicago Daily News, Financial Section.—The home, quick-freezing unit, with freezing and storage compartments, for the first time brings to the American home a cold stor-

age plant adaptable to a wide variety of uses. . . . One huge appliance manufacturer is planning the production of 50,000 freezer units as soon as the War Production Board permits.

* * *

From the Kansas Stockman.—The National Live Stock and Meat Board, cognizant of the increasing interests in frozen meats, has established a research fellowship at Iowa State College for a comprehensive study of defrosting and cooking frozen meats.

This move is timely, as full information to the housewife in handling and cooking frozen meats and poultry will dispel any timidity and greatly speed the general acceptance of frozen foods. On this point, my experience has been that frozen meats and eviscerated frozen poultry should go directly to the skillet or roasting pan in the hard-frozen state and thaw out there. Thawing in water soaks out flavor and much nutritive value, and also brings about a considerable increase in the bacterial count. This bacterial increase also occurs when frozen meat or poultry is set out in room temperature to thaw slowly and although this method of thawing is much preferred to the water-soaking method, it too is faulty. Placing frozen meat or poultry directly in pot or pan not only avoids an increase in bacteria but also seals in the natural juices.

* * *

From Quick-Frozen Foods and the Locker Plant (Magazine).—The green light has been given to locker-plant construction which may continue practically unrestricted, with the exception of the refrigerator deliveries this year (1944). The locker-plant interests, with their corresponding freezer interests [they sell home freezers], stand for small home units.

* * *

From Overseas.—The British periodical *Modern Refrigeration* as quoted in the *National Provisioner* for January, 1945 says: "Whatever new conquests are made or attempted by protagonists of quick-frozen food marketing in this country (England) after the war, America is evidently determined to carry that form of commercial food practice to new heights. We are definitely assured that the frozen food industry is ready to break away from the semiluxury stage to bid for mass consuming markets in the United States. For, whereas this year (1944) the business in the United States has reached the record total of nearly 375,000 tons, food freezers and their equipment manufacturers are preparing for annual sales of four times that volume.

"It is predicted that within four years after

the war, frosted foods will be retailed by 100,000 stores in America. . . . This is to be accomplished by reducing the price premium which such produce held over canned goods and fresh foods, and it is promised that a much wider selection of foods will be marketed after the war—more than 200 varieties compared with about 75 sold today."

• • •

The Chicago Daily News.—We quote from an article in the home edition of this popular newspaper as of Jan. 12, 1945, to illustrate the trend: "The postwar home will be easier to keep clean, easier to heat, will be cooler in summer, have a permanent color scheme and its own deep-freeze unit. . . ."

Large freezers and compartments for the home and apartment buildings are essential to encourage the purchase of larger amounts of ready-to-use poultry for the home commissary, including those for apartment buildings. It is reported that such lockers have been installed in an apartment building in Cleveland, Ohio, as a test of frozen food deliveries to city dwellers. The promotion of frozen meats to the public, it is said, will not require as much of a selling job as to the meat retailer and the unions, and will develop the installation of the self-service, low-temperature dispensing units rapidly coming into use by the retail stores—grocery and delicatessen (fig. 4).

• • •

From Quick-Frozen Foods and the Locker Plant.—Various refrigeration industry committees have recommended to the WPB a program of 500,000 units a year—125,000 per quarter, and 17,000 dispensing cabinets the last three months of 1944. . . . Obviously, the distribution of quick-frozen meats hinges on the low temperature space at the retail stores. . . . As home storage space grows, the temptation to buy frozen foods will grow also. The advantage of being able to buy a wide array of frozen cuts at the retail store and having, besides, adequate storage for indefinite holding in the home are so startling as to bear the seeds for a food revolution. (emphasis mine.)

• • •

From American Egg and Poultry Review.—Speaking before the Poultry Industry Educational Exhibition at Montreal, November 22, 1944, Howard C. Pierce of the Great Atlantic and Pacific Tea Company, after reviewing the whole poultry situation of the United States and Canada, had this to say about dressed poultry: "For many years, the bulk of poultry has been sold undrawn. Heads and feet are left on. Only the blood and feathers have been removed by the producer or packer. The final dressing is done by the retail store or by the

consumer. Even when poultry is well drawn, with head, feet, and entrails removed, the consumer generally has to pick pin feathers, singe, and wash the bird in the home kitchen. Recent developments have brought forth quick-frozen evisceration methods of preparation and sale of chickens in parts. By these methods, whole birds are offered, or a consumer planning a party can obtain frozen breasts, or a family of two liking dark meat can purchase thighs and legs only. . . . Development of the fully eviscerated, quick-frozen bird, so thoroughly cleaned that the consumer has no finishing to do in the kitchen at home, has been a remarkable contribution to increasing consumption of poultry. The modern poultry and evis-



—Courtesy of Quick Frozen Foods and the Locker Plant

Fig. 7—Freezer for the small store—self-service.

cerating plant is an outstanding food production establishment. In these plants, poultry is fed for fatness and flavor, carefully slaughtered, graded to standards and specifications, pinned, singed, washed under high pressure streams of water, eviscerated, carefully wrapped, rapidly frozen, and cleanly handled at all times until it reaches the consumer. . . . To make a marketing program successful, the retailer must carry out his part by keeping adequate stocks of the highest grade and finest quality of poultry products. . . ."

In view of the high source of this quotation and the character of the listening audience, it may be taken as the true portrayal of the coming situation. Other ramifications might be mentioned, such as the new enterprise of delivering frozen

foods from warehouse to home, as a certain iceman is doing in a large city (Rochester, N. Y.), gradually transforming his business from ice to food in a manifestly successful fashion. Then the community locker plant, with its facilities for slaughtering animals, is wide open for the development of poultry evisceration for the consumer or local trade.

Since these data were assembled, information arrives to the effect that one of New York City's largest department stores, after sponsoring research on frozen meat at Massachusetts State College, is installing equipment for the retail sale of frozen, cooked meats.

FROM THE PUBLIC HEALTH FIELD

Except for the rejection of manifestly unfit market poultry in some cities, it cannot be claimed that poultry has aroused much interest in public health circles. While the federal regulations on the inspection of quick-frozen, eviscerated poultry are comparable to those enforced for large animals by the U. S. Department of Agriculture, special regulations formulated for fowl under state laws in a few states apply specifically to dressed uneviscerated poultry. The State Board of Health of Delaware¹ (taken as an example) defines a "poultry dressing plant" as a place where "chickens, ducks, geese, and turkeys are slaughtered, defeathered, cleaned, and chilled for commercial shipment." Applicants for license to operate such a plant in Delaware must comply with sanitary specifications of the Board regarding buildings and grounds, floors and ceilings, wall construction, toilet and washing facilities, sinks and water supply, cleanliness and habits of employees, fly and rodent control, elimination of unhealthy birds and cadavers, evacuation of crop and vent, technical inspection (casual), refrigeration, and all-around hygienic measures and conditions. In general, however, poultry has the green light in its journey to the retail store or kitchen.

SUMMARY

1) A pattern for the marketing of eviscerated poultry is suggested and recommended for the attention of the veterinary profession.

¹Personal communication from Dr. J. F. Cherry, State Board of Health, Dover, Del.

2) The killing, dressing, eviscerating, inspecting, packing, and quick freezing at the smaller dressing plants located throughout the country are recommended as an outstanding sanitary reform.

3) Manufacturers of poultry dressing-plant appliances have worked out specifications for economical eviscerating equipment, and the makers of freezing units and cabinets of all sizes are prepared to fill their part of the program.

4) The installation of dispensing cabinets in retail stores, and the establishment of strategically located warehouses, are among the recommendations made.

5) The background of the program is meat inspection at one end and the home freezer at the other. Intermediate installations will follow.

6) The stage is set for the most revolutionary change in the handling of poultry ever made. The health factor and the prospect of increasing the demand for poultry are self-evident.

7) The veterinary profession is urged to keep in touch with the transformation in the interest of public health and the poultry industry.

Radio Retards the Flight of Homing Pigeons

Trials carried out by the Signal Corps of the United States Army showed that the flight of homing pigeons is badly hampered by the radio. Pigeons loosed while the radio was transmitting flew, bewildered, around the station for fifteen to twenty minutes before taking off for the ten-mile flight prepared for the trial. Three groups of 10 pigeons, subdivided into groups of 5 birds each, were used. The groups released while the radio was transmitting arrived at the reception loft in forty-two to fifty-two minutes, while those released during radio silence flew straight to their destination in eighteen to twenty-one minutes. The type and training of the test birds and the weather conditions were equal in each trial. Although the one group blundered in their task and the other performed normally, final conclusion on the effect of radio on the homing instinct of pigeons is withheld pending a larger number of trials.—*From Army News, Bureau of Public Relations, War Department, Jan. 1-15, 1945.*

The Eastern Shore Broiler Industry and Its Problems

J. L. CHERRY, V.M.D.

Dover, Delaware

THE EASTERN Shore of Delaware is about 300 miles long, but the broiler industry is centered around the lower section, the adjoining four counties in Maryland, and the northern county of Virginia.

The broiler industry on the shore originated in the early twenties when farmers in the neighborhood of the beach resorts made special efforts to have cockerels of broiler size before the regular season because they brought premium prices.

In 1921, Homer Pepper of Selbyville, having business in Philadelphia with his Model T truck, took eight coops of chickens along which sold to such good advantage that he started that branch of industry known as the "live shipper."

In 1924, Mrs. Wilmer Steele, the wife of a Coast Guardsman, living at Ocean View, sold her entire flock of 1,000 broilers for 57 cents live weight at the house. This good news, coupled with the building of a new canal that practically ruined the oyster, crab, and fishing business conducted on Indian River, turned more attention to chickens. About this time, brachial or range paralysis spread among chickens over 12 weeks of age, which made the broiler, which is sold at 10 to 12 weeks of age, the type of chicken to raise.

More of the heavy or meat type chickens made their appearance. A large percentage of day-old chicks were shipped from the New England states.

The chicken houses evolved from small huts to long houses heated by hot water, which changed to coal brooders with 300 capacity. Most of the houses today are long houses with coal or oil brooders in each room, with capacity up to 600 birds per unit, and with outside runs for each in nice weather. The feed room is located in the center with living quarters over it. One attendant cares for 12,000 birds.

In 1925, the Delaware State Board of Agriculture established the poultry pathology laboratory for pullorum testing and

Dr. Cherry is on the staff of the Delaware State Board of Health.

Presented before the twenty-eighth annual meeting of the Central Atlantic States Association of Food and Drug Officials, May 11, 1944, Atlantic City, N. J.

laboratory diagnosis of sick birds. Maryland also has a laboratory at Salisbury and one at Centerville. The early control of pullorum disease has been one of the greatest factors in making this industry possible.

In 1932, Hall Bros., of Dallingford, Conn., introduced a hybrid that has become the most popular type for hot house or year round broilers.

The "live shipper", desiring a heavier bird, caused the feeding period to extend to fourteen weeks or longer, depending on market demands.

Production increased from 1,000 in 1923 to 19,000,000 in 1938 in Delaware.

In 1938, Jacob Udell of Frankford started the first large poultry dressing plant on the peninsula in a building formerly used for tomato canning. This set an example as most of the ten dressing plants are in old tomato canneries.

After the dressing plants opened, the number of birds raised increased rapidly from 32 million in 1939 to 92 million in 1943. The dressing plants could utilize a smaller bird than the live shipper demanded. The shipper, to meet the dresser's competition, had to accept smaller birds which helped the grower to turn his investment more quickly.

The dressing plants absorb about 60 per cent of the available birds in normal times. These birds are fed three days in the feeder station of the plant before they are killed and city dressed, that is, blood and feathers removed, chilled in ice water for three hours which brings the internal temperature to near 40 F. They are then sorted for size and quality, ice packed in small barrels about 135 to 145 lb. to the barrel, and sent to New York. The Army, having trained personnel at each plant, is taking about 2 $\frac{1}{4}$ million pounds a month from plants on the shore. This is voluntary on the dresser's part.

This industry grew like Topsy with the various dressing plants reflecting their owner's characteristics to such an extent that in 1941 the Delaware legislature passed a law reading in part:

Section 1.—That on and after the approval of this Act, no person whomsoever shall dump

or otherwise deposit any blood, garbage, carion, offal, filth, or other refuse derived or resulting from the dressing of fowl and poultry of all kinds in an obnoxious or noisome state upon any land or in any stream or other body of water within this State.

In November 1943, the Delaware State Board of Health passed a regulation governing the construction and operation of poultry dressing plants. All branches of the industry—hatchery men, growers, live buyers, dressers, and egg producers impute sinister motives to each other which stimulates competition.

The problems of the poultry industry are divided into permanent and transitory. We may class those caused by the present emergency under the latter.

A lack of high quality disease-free hatching eggs is a good place to start. When hatching eggs are in big demand, some of the producers will house their hens and feed for forced egg production. Eggs produced under these conditions cause unthrifty chicks. Some unscrupulous producers sell eggs from flocks not pullorum-free.

The death rate of baby chicks runs from 2 to 100 per cent with an average of about 10 per cent. Chilling in shipping, improper preparation of houses, disease, and improper feeding are the main causes.

The major problem which concerns this particular group is that of sanitation and covers the field from the producer to the actual consumer.

The "live shipper," dressing plants, brokerage houses, and retailers have learned by trial and error the methods best suited to their finances, but, sorry to say, the pioneers in these endeavors set a poor precedent for sanitation.

Conditions in dressed poultry were far from ideal from the health official's viewpoint. The federal Pure Food and Drug inspectors started surveys of the Eastern Shore in 1939 and most of the plants were court visitors at least up until the spring of 1943. There are only three dressing plants that have not been indicted for interstate movement of diseased dressed poultry. Live poultry moves interstate unchecked. In 1942, Mr. Beckett, state sanitary engineer, along with the aid of some of the men in the industry, endeavored to have legislation passed in Delaware that would bring all shipments of live poultry under inspection by some responsible state agency, but their efforts have not been successful.

The problem of hatchery wastes involves infertile eggs. The vigilance of the Pure Food and Drug inspectors, combined with the passing of egg regulations by Maryland and Delaware, have apparently solved this problem. The unhatched egg and shells from careless or unprogressive hatchery men still cause unpleasantries on occasion.

Chickens that die in large numbers in growing flocks are thrown in woods or ditches by some. These are problems for further education on the part of state agencies and the producers themselves.

The manure from the dropping pans in the dressing plant feeder stations is a very good soil dressing but at present farm demand in summer will not use half the output of about 5,000 tons per month. There are some experiments being run with this manure in mushroom growing, which looks promising.

The dressed chicken that is of questionable health or mutilated causes the loss of approximately 6,000 lb. of edible poultry a week. Two dressing plants have eviscerating plans under federal inspection. Five more are coöperating in the construction and equipping of a plant to be under federal inspection that will take care of all questionable birds on the Eastern Shore, resulting in only grade A poultry being shipped. This type of broiler would show less than one-half of one per cent diseased or unwholesomeness.

The poultry industry is young and the above are growing pains which education, coöperation, and regulations should cure in the near future.

Eastern Shore fresh ice-packed broilers make a scientifically raised, succulent-meated chicken available to one third of the consuming public of the United States within twenty-four hours from slaughter.

The main problems yet facing the industry are: (1) The resolving of the remaining abuses due to the quick unregulated growth of the industry, and (2) The need of similar regulations in the several adjoining states involved in the poultry industry.

[Dr. Cherry's article is published as a companion of "Proposed Pattern of Poultry-Meat Marketing" appearing in this issue for the purpose of verifying the tremendous growth of poultry production in but a small section of the country and to indicate that troubles of the poultry dressers remain to be solved.—Editors.]

Lymphoblastoma in a Pig

H. C. H. KERNKAMP, D.V.M.

St. Paul, Minnesota

LYMPHADENOPATHIES of the proportion of large tumorous masses, while not exceedingly rare in swine, are none the less uncommon. In veterinary literature, cases of lymphoid hyperplasia are described under a variety of names, *i. e.*, leukemia, pseudo leukemia, lymphocytoma, lymphoma, lymphosarcoma, and lymphoblastoma. Lymphoblastoma, according to Karlson,¹ is the most inclusive term and until more is known with regard to some of the fundamental points of difference between these lymphoid hyperplastic conditions, the term suggested appears to be more suitable. We are accepting this viewpoint in the choice of the name to designate the disease described in this report.

One of the principal reasons for reporting this case is the young age of the patient. At the time this pig came for autopsy and the real nature of its illness was discovered, it was 77 days old. This was twenty-four days after it had first manifested any evidence of being abnormal to the extent that it attracted the attention of the herdsman. The pig at that time was 53 days old. It was the only pig in a litter of 7 to show any signs of disease.

The particular symptom that prompted the herdsman to seek our assistance was that of a partial paralysis of the posterior parts of the body. This symptom was still much in evidence when the pig was sacrificed. The motor activity of the skeletal muscles of the affected region was almost wholly abolished and at no time in the course of the illness did we observe any change in this symptom. Tactile sense and response to deep muscle pressure were also impaired.

After convincing ourselves that no fracture of the vertebral column, pelvis, or appendicular skeleton was present (palpation could be conducted readily in this young pig), a tentative diagnosis of degeneration of nerve tracts in the posterior cord was offered. The physical findings

were not unlike those described as resulting from a deficiency of certain members of the vitamin B complex, notably pantothenic acid and pyridoxine.^{2, 3, 4} Against this viewpoint, however, was the fact that this pig, its litter mates, and about 350 others were living under conditions which should preclude a deficiency of this kind. Furthermore, the patient was young and the onset sudden. On the other hand, there was the possibility that this pig, not utilizing the available dietary essentials, was suffering from the effects of a deficiency. This view prevailed.

Having previously treated successfully several cases of a locomotory incoordination, which were attributed to certain dietary deficiencies, by feeding the patient raw liver, it was decided to learn what effect liver would have on this case. In addition to its regular diet, consisting of cereal grains with protein and mineral supplements, it received approximately 200 Gm. of raw liver (pig liver) each day for twenty days. The general physical condition of the pig improved, but the paralysis was not in the least benefited.

From time to time during the course of the treatment, the patient was moved from place to place in its pen, assisted to its feeding and watering, and examined as to its paralysis. The appetite was always good and the bowel and urinary evacuations normal. The illness was afebrile. During the second week of hospitalization, lymph nodes in the cervical and praeauricular regions increased in size and firmness. Inasmuch as we failed to note any progress toward recovery, it was decided to sacrifice the animal and perform a postmortem examination. The necropsy showed the error of the tentative diagnosis.

The significant and outstanding feature of the autopsy was the marked enlargement of lymph nodes in the thoracic and abdominal cavities. The thoracic nodes which are distributed on the first sternabra and lower face of the trachea and the bronchial group at the bifurcation of the trachea formed a grapelike mass that compressed the apical lobes of the lungs and

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rendered them practically nonfunctional. The nodes along the thoracic aorta were also enlarged, measuring between 3 and 4 cm. in length. The lumbar, renal, and internal iliac nodes formed an irregular tumor mass that weighed 170 Gm. Another lymphoid mass was attached to the sciatic ligaments of both the right and left sides. There were several grayish nodules, the largest 4 cm. in diameter, in each of the kidneys. The cervical and prerural nodes were greatly enlarged. Aside from the findings just mentioned, no other gross changes were present.

Histologically, the tumor masses were composed of large rounded cells (larger than normal lymphocytes) that were closely packed together. They contained large hyperchromatic nuclei with deeply strained chromatin granules clumped together in some places and chromatin threads. A small rim of cytoplasm surrounded the nucleus. Many mitotic figures were seen in every field. The spleen, while not showing discernibly gross changes, did show in sections, small areas where the cell type and arrangement was similar to that seen in the frank tumor masses. Sections from the heart and liver did not show changes. Diagnosis, lymphoblastoma.

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³Hughes, E. H.: Pantothenic Acid in the Nutrition of the Pig. J. Agric. Res., 64, (1942): 185-194.
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Criticism of Swine Panel Report

Dr. Frank Breed, chairman of the "Panel Discussion on Swine Diseases" presented at the Chicago session, and published in the January JOURNAL, writes:

I read with interest your editorial on technical criticism (JOURNAL, Jan. 1945, p. 58) and agree a hundred per cent with what you had to say. I am very confident that the criticisms that are being offered today, in the few cases in which they do occur, are exceedingly mild compared to those of twenty-five to thirty years ago. I do not know just how to interpret this: whether it is a step forward or backward.

It is possible that the criticism of former times had more or less personal rather than scientific foundation. It seems to me that the criticism offered in more recent years, offered in a more or less gentlemanly manner, has been primarily from the standpoint of scientific facts.

My first desire is to compliment your editorial staff for the excellent swine-medicine number, but I am constrained to call your attention to the article by Dr. Robert Graham and co-workers entitled, "Studies on Porcine Enteritis—1. Sulfathalidine Therapy in the Treatment of Natural Outbreaks." While this article was published in full, I am sorry you left Dr. Graham entirely out of the picture in so far as the swine panel was concerned, since he was really one of my strong supporters and did a great deal to build up this panel. The material he gave is found on page 7 of the report and he should at least have been given credit to a certain extent in the panel discussion, as it contained the meat of his article. I feel that practitioners who read the panel discussion would be as much enlightened as if they read the entire article. I am writing this criticism solely to give Dr. Graham credit where credit belongs in the swine-medicine panel.

Nearly 3,000,000 Doses of Strain 19 Vaccine Produced in Year

A recent release from the Bureau of Animal Industry, USDA, noted that over 2,500,000 doses of Brucella vaccine, strain 19, were produced commercially during the last fiscal year, a 25 per cent increase over the previous year. In addition, the Bureau produced about 200,000 doses in its own laboratories for use in the federal-state program of bovine brucellosis control.

The quality of strain 19 vaccine is closely guarded by official supervision. Of the commercial production, tests showed that 7 per cent of the batches were unsatisfactory; these were condemned. To aid production of Brucella vaccines of uniformly high quality, the Bureau furnishes commercial laboratories periodically with fresh cultures of strain 19. As a further safeguard, the expiration date for use of the vaccine was recently reduced from six months to three months.

Australia produces one-fourth of the world's wool. The Argentine ranks second, and the United States third.

SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

Some Useful Techniques in Dairy Practice

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RETAINED PLACENTA is one of the most common conditions met in dairy practice.

It is largely preventable by proper breeding, feeding, and herd management. Only strong fulltime calves of healthy parents should be bred. They should be properly fed, especially during the first six months of their lives, since it is during this period that the genital organs develop. Calves brought up by some inexpensive feeding method reach breeding age, sexually immature, unable to carry the burden of reproduction and lactation. Heifers should not be bred until 2 years of age. Such heifers bred to healthy bulls, produce healthy offspring and suffer less from retained placenta.

The health of the bull is determined by blood tests and the examination of spermatozoa. Since cows bred thirty to sixty days after calving often retain their afterbirth, they should be bred at a later date.

Retained placenta is a pathologic state, due either to a placentitis or metritis. Its seriousness may be determined, to some extent, by the degree of inflammation present.

In a normal birth, the fetal membranes follow in one to four hours. When the umbilical cord ruptures, the chorionic tufts fall away from the cotyledons; involution of the uterus occurs, and the membranes are expelled.

In retained placenta, infection and uterine inertia are always present. Prolonged retention and inertia invite further infection and extension of the inflammatory process. In view of this fact, it is good practice to remove after births early: twenty-four to forty-eight hours, in order to hasten involution and thus prevent further progress of the infection.

Clinically, retained placenta may be divided into two groups: Those that should be removed manually and those that should not.

Before attempting removal, administer epidural anesthesia in every case, using from 5 to 8 cc. of 2.5 per cent procaine hydrochloride, depending upon the size of the animal. The anesthesia gives comfort to the patient and operator, and the chances of complete removal are improved. Out of 30 cows treated, complete removal was possible in 18 cases; in 8, removal was incomplete, and in 4 removal was not attempted. After anesthesia has been established, wash the rump well with warm antiseptic solution.

Protect the arms with rubber obstetrical sleeves and lubricate the hand and arm well with powdered lubricant, to permit easy entrance into the uterus and prevent injury to the genital tract.

THE PRECISE MANUAL

Grasp the membrane with the forefinger and thumb at the edge of the first caruncle encountered; lift it away from its attachment, and once started, sweep the placental tufts out of the cotyledonal crypts with the third or fourth finger. This first attempt determines whether or not manual removal is possible. If favorable, proceed successively to the next caruncles, always bearing in mind that the manipulation should be so gentle that no injury is done to the uterus. The aim, of course, is to accomplish complete removal. While this is not always possible, success is greatly enhanced if the operator does not shuttle in and out of the uterus.

As the apex of the horn is reached, it will be found that the anesthesia makes it

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possible to lift the cotyledons within the range of the fingers and thus bring about complete removal.

Drain and Medicate the Uterus.—Should there be a collection of fluid in the uterus following the operation, drain it out. This is accomplished with a rubber tube and pump. Pump the tube full of water and carry the end of it into the body of the fluid, release the other end of the tube from the pump, and syphon the fluid out. This accomplished, place a capsule containing charcoal in the uterus. Where complete removal is not possible or removal is not attempted; a course of sulfanilamide orally should be given. A long period of rest before rebreeding the animal is recommended.

TEAT INJURIES AND TEAT OBSTRUCTIONS

During a period of five months, 61 operations were performed for complete or partial obstruction at the end of the teat caused by injury to the streak canal and sphincter muscle. These injuries are self-inflicted. The end of the teat is pinched between some part of the animal's hind leg or foot and the floor in such a way as to tear the mucous membrane of the streak canal loose from its attachment at the upper border of the sphincter muscle and force it completely through the teat orifice. A slight hemorrhage occurs, and as the edges of the orifice retract within the canal, they cause a slight depression over which a scab forms to complete the obstruction.

Of Economic Importance.—The accident is common and therefore, of real economic importance. Most of these injuries will lead to loss of the quarter (or possibly the animal) if not surgically treated. When the accident occurs, it is a common practice among dairymen to resort to the use of a milk tube or teat dilator in the hope that he can restore the teat to its normal state. Failure is the rule in such treatment and mastitis with loss of the quarter and frequently the cow is the usual result.

It is difficult to restrain owners from using teat tubes and dilators on obstructed teats. They presume that unless the milk is drawn at the regular milking time, the quarter will be lost. Better to advise that no milking whatever is preferable to their use. Many veterinarians hold to the belief

that noninterference (except a topical application) is the best method of treatment.

In my experience, these cases respond well to surgery. Success depends upon operating before tubes or dilators have been used, and it is necessary to educate dairymen on this very important fact.

The Technique.—To restrain the cow, pull her well forward in the stanchion with nose lead and run a sash cord around body in front of udder where the cord passes back, place it anterior to the tuber coxae on the operating side and posterior to it on the opposite side; an assistant pushes the tail straight over the back. Properly cleanse the end of teat and inject a local anesthetic with a 2-cc. syringe and 25-gauge 3/8-in. needle into the end of the teat, 1/2 cm. anterior and 1/2 cm. posterior to the opening of the teat duct. The anesthetic used is procaine 1.5 per cent; adrenalin 1 to 100,000; chlorethane 0.5 per cent. Operate with a sharp-pointed narrow-blade Lichty, teat bistoury. Grasp the teat in the left hand; force the milk down to the end, and thrust the bistoury straight through the teat duct until all the blade is within the canal. Turn the cutting edge against the sphincter at the anterior part of the teat and sever it completely by making a circular sweep with the knife and at the same time retract it so as not to cut through the side or end of the teat. Do not pull the knife all the way out of the end of the teat after the muscle is severed but turn it to the original position in the streak canal, push it forward so the blade is entirely within the teat canal and the shank is in the streak canal, then turn the cutting edge against the sphincter at the posterior part of the teat and proceed as before.

Milk which will stream freely from the teat (since the operation is performed when the udder is full) washes out the blood. When the free flow of milk ceases, the quarter is milked at ten to fifteen minute intervals as long as there is evidence of hemorrhage. For a few days, the end of the teat is bathed and gently massaged in warm soapy water before milking; after each milking an ointment of Thuja and zinc oxide is applied until the teat is normal.

Membranous obstructions crossing the base of the teat, or so-called "spiders," are often found. While some of these are congenital, most of them seem to be due to an inflammatory process which takes place

during the dry period. The usual relief for the condition is the rupture of the membrane by pressure. An udder clamp, two if necessary, is fixed tightly at the base of the udder above the obstruction so that some milk will be caught between the clamp and the obstruction. With this milk pocket under great pressure, the operator forcibly compresses the sides of the pocket in the hope of rupturing the membrane. If successful, milk will often splash out the end of the teat. This operation can usually be performed with the animal in standing position, under the same restraint described for operations at end of teat. When it is not possible to rupture the membrane by this method, the owner is advised to leave it alone.

Teat Fistulas.—Acquired teat fistulas frequently follow from barbed wire cuts. These usually can be operated upon successfully during the dry period.

Shave the hair from base of the teat, then clean and disinfect the entire organ. Use infiltration anesthesia and restrain the animal well during the injection of the anesthetic. If the anesthetic solution has been well distributed, the operation is done with the cow in standing position. By encircling a rubber band tightly around base of teat, there will be no hemorrhage. As a guide, insert a milk tube up the teat canal and out the fistulous opening. The tube serves as a guide while making the dissection. The entire fistulous tract is removed by making an elliptical incision around the fistula, down through all the structures to the teat canal.

The wound is closed with interrupted sutures, passed through the skin and all subcutaneous tissue down to the mucous membrane, using size 90 iron-dyed surgical linen and a small needle. After the suturing, remove the rubber band and gently milk out any blood that may flow into the teat canal. The stitches must be removed at the end of a week.

In a study of 437 cases of polio, LaBocetta and Lucchesi (*Pathfinder*, Nov. 15, 1944) found that 164 had had their tonsils and adenoids removed. Conclusion: Indiscriminate removal of tonsils and adenoids should not be condoned. . . . Three out of 4 cranial cases were without these glands.

The Burdizzo for Dubbing Comb and Wattles

I note in the October (1944) issue, page 205, that dubbing the comb and wattles of chickens is best done with the aid of a pair of shears or scalpel. You would be surprised how well the Burdizzo does this job, especially in chickens under 14 to 16 weeks of age. The operation is bloodless, of course, and the comb and wattles slough in about five to seven days. In a few instances, it might be necessary to clip a few strands of tissue with the scissors in case uneven pressure had been exerted by the instrument.—*M. W. Emmel, University of Florida, Gainesville, Fla.*

Talcum Not So Harmless

In the nineteenth century, when Halstead began to wear rubber gloves to prevent infecting wounds in the course of his surgical work, generous sprinklings of talcum powder over the hands and in the gloves became the standard technique. In the last ten years, however, surgeons have suspected that talcum, escaping into the tissues from the gloves, was the cause of tubercular granulomas at the point of entering the body (vagina, cervix, peritoneum). The pattern of the lesion was that of tissue reaction to insoluble foreign bodies. Later, it was asserted that the basic element—silicon—was leached out of the talc by body fluids and thus added a chemical cause to the irritation. The presence of talc crystals has been demonstrated in the granulomas. Mostly, the sequel followed intra-abdominal surgery. Therefore, says *J.A.M.A.* editorially, "The surgical scene seems to be set for the exit of talcum." Potassium bitartrate or nongelling starch are the recommended substitutes.

There is general agreement that talc-treated gloves are responsible for the lesions mentioned. Advocates of talc (*J.A.M.A.* Oct. 28, 1944), however, question that any chemical action has been proved.

BUY WAR BONDS AND STAMPS

The Streamlining of Surgery

Dr. Gerry B. Schnelle, Angell Memorial Hospital, Boston, writes:

Prodded by your editorial (The JOURNAL, Jan. 1945, p. 58), I offer my feelings on an article, the contents of which have irked me for some time. This was entitled "Streamlined Oöphorectomy Canis", by Dr. C. H. Haasjes. [The JOURNAL, Dec. 1944, p. 429].

Only the fact of Dr. Haasjes' unquestioned professional integrity and ability prevented an earlier reply. Since I have previously expressed admiration for the British veterinarians' give-and-take, rough-and-tumble letters of criticism, your editorial voices my feelings that more of it should be done. I believe it good for the soul.

The article on oöphorectomy, I believe, rather than offering good technical advice, illustrates several violations of good surgical principles which a "clever" surgeon can get away with because he is gentle in the handling of tissues, reasonably clean, and because (thank God) the bitch has remarkable resistance to infection. Dr. Haasjes says that "an ether cone [is] clapped to the nose and held in place with the right knee. Meanwhile, I scrub things up and do the operation." Does not the Doctor think it also advisable to scrub up himself?

Secondly, he refers to through and through stitches which I interpret to mean through the skin, muscle, and peritoneum and the reverse on the way out. This must later be cut and one end of it pulled through from the outside into the abdominal cavity and out again. Is this not a violation of good surgical principles?

Lastly, Dr. Haasjes says: "In twenty-four years only one bitch has torn out the stitches and only one developed hernia later at the operative area." In a professional publication such a statement which the reader must interpret as factual information should be supported by statistics. The human memory is far too frail to allow the glib use of such a statement in a technical journal. Without statistics, the doctor should precede such a statement with "I recall etc." or, better still, not say it at all, for professional men should know that accurate records have a habit of surprising the operator far more than the bystander. My criticism concerns not only the author but also the editor for publishing an article which says, in effect, "see what a slick surgeon can get away with", for others not quite as adept may not get away

with it. Furthermore, references to recovery rates and failures of the method described should be supported by statistics.

Editor's Comment.—Criticisms involving the editor have the advantage of giving him the opportunity of defending his part of the given offense. The observations or conclusions in the material itself are for the author to defend. True, an editor should not mislead the reader. In this case, it was thought that the comedy of the headline, "Streamlined Oöphorectomy Canis" (which was our own), told a story—the story of the millions upon millions of surgical operations performed on farm animals for "a dime a dozen", so to speak, as distinguished from the classical surgery of the college clinic and pet animal hospital. It's the old saw about the rude surgery of the farm, the technique of which has to be measured in dollars and cents, mainly cents, come what may. Short cuts across the ambient infections (= streamlined surgery) of the farm are of great economic importance to the nation and they have removed a great deal of the former cruelty. They should be encouraged even though some of the meticulous details of classical surgical work have to be ignored. Veterinarians must not drive farmers to the handy technician of whom there are too many.

In the case of the average farm bitch, were the veterinarian to insist that she be brought in where all (or nearly all) risk of infection could be removed, she would instead probably get hung to the barn door or rung of a ladder and spayed by someone for 6 bits—without soap, white gown, or anesthesia. The editor believes that much can be gained for profession and country by encouraging the streamlining of surgery in farm animals.

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Comment by Dr. Haasjes.—It does not matter much whether anyone believes in my method of closing the abdomen in the spaying of bitches, but I would deeply regret to have left the impression of not having had any fatalities from this operation. The mention of but one accident in twenty-five years clearly referred, not to total mortality, but to postoperative even-tration. I was writing especially about

sutures, not about the technique of the oophorectomy.

I do wash my hands and even wear sterile rubber gloves, particularly the latter if the operation is performed within three days following the handling of contaminating material. This is mentioned as a warning to rural practitioners—washing the hands does not sterilize them by any means and there is some bare-hand surgery to do on the farm, believe it or not. I would have to charge \$10 for performing an ovariotomy at the hospital but farmers here will not pay that kind of money for the operation. I have seen Dr. Sales, of Michigan State College, spay bitches in six minutes by the clock. It takes me ten on the farm after the anesthesia has been administered.

Most of the fatalities I have had from oophorectomy in bitches were from secondary (delayed) hemorrhage which Stephenson (*Cornell Vet.*, April, 1939, p. 132) describes at some length as an unexpected sequel, following otherwise excellent surgical work. He attributes the bleeding to various causes: (1) ligating too near the end of the pedicle, (2) the receding of the artery within a stretch structure; and (3) drawing the ligature so tight that it cuts through before the clot is secure. When these causes could be ruled out, I have wondered whether some adult dogs are not hemophiliac. I have not had this accident in pups. The upshot is that I refrain from spaying the old farm bitch as often as possible. The adult bitch can be such a family favorite that the loss is grievous and, besides, spaying the farm bitch that has had pups makes her more ornamental than useful. In the country, the loss of the family dog in the bloom of health from spaying is a tragedy in the doctor's family too, whether the operation was "streamlined" on the farm or following a classical procedure in the hospital.

use of chemical caustics in young calves. Irons of different sizes to fit neatly over the horns of calves of different ages are used.

Gestation Period of Ewes

The lengths of gestation periods in 2,500 ewes studied at the United States Sheep Experiment Station and Western Sheep Breeding Laboratory at Dubois, Idaho, ranged from 141 to 159 days. The Rambouillet's averaged 151 days and the Columbia's 148 days. There was a tendency of ewes bred early to have longer periods of gestation than those bred late. The period was somewhat longer in the old ewes than in the younger ones. The birth weights of long periods were consistent with the gains to be expected immediately after birth. The survival rate was highest for the longer gestation periods.

Shock and Blood Volume

Since the earliest studies of shock as a recognizable entity, the circulatory embarrassment caused by the emptiness of vascular space has received the most attention and, as a consequence, the first attempts at treatment centered upon restoring blood volume by means of injected salines. Often, however, the benefits were transient. As isotonic salt solutions too quickly disappear from the vessels and leave the emptiness unfilled, colloidal solutions (plasma, gelatin) capable of holding the injected fluids within the blood vessels replaced the salines, and, more recently, repeated injections in lieu of single doses have come into use. In short, as was demonstrated by Swingley and Kleinberg (*Am. J. Physiol.*, July, 1944), on experimental shock induced in profoundly anesthetized dogs, transfusion for shock to restore lost volume should be given in doses one, two, four, and seven hours apart. In the case of both gelatin and plasma, divided doses is the method of choice in the handling of shock. Whether the shock in large animals, due to the pooling of blood in visceral vessels, will respond better to divided, rather than to single, doses of fluids remains to be shown.

Actual Cautery Dehorning

The dehorning of calves (6 wk. to 4 mo. old) with a cup-shaped hot iron, previously described in the JOURNAL, is "getting increasing attention among beef-cattle men," says *Successful Farming*. The burning of a deep circle around the developing horn destroys its circulation and, therefore, the growth of the horn structure. The operation precludes bleeding and the well-known complications which sometimes follow the

CLINICAL DATA

Clinical Notes

The Nebraska Experiment Station found that alfalfa hay reduced the occurrence of urinary calculi in feeder lambs.

Calories are no less important in nutrition than they were a generation ago, but the vitamin has driven them off the lot. Soon the twain will have to meet.

Gamma globulin, a by-product of blood collected for blood banks, protects babies and children against measles. Given to 814 children exposed to measles, three fourths escaped the infection, according to a report from the New York City Department of Health.

Fortified red squill is heralded as an improved rat poison. It is deadly for rats but on account of being a powerful emetic, it is not retained in the stomach of the vomiting animals in toxic amounts. The dry powder, mixed 1 to 10 with fresh bait, will kill 9 out of every 10 rats that eat the bait, the United States Fish and Wildlife Service announces.

Reticulo-Endothelial Antibodies

The widely but not universally accepted theory of reticulo-endothelial antibody formation is based upon the presumption that any cells that can englobe and devour bacteria should certainly be occupied also in synthesizing antitoxic bodies. But, it's still a theory, despite some quite convincing proofs, such as the depression of antibody formation when the reticulo-endothelium is blocked by the use of chemicals (iron-sugar, trypan blue, India ink), or getting the macrophages occupied with the digestion of another colloid.

The electron microscope, using magnifications up to 50,000, has exposed viruses having distinguishable cell walls, heads, and tails.

The U. S. Bureau of Animal Industry reports promising results in the prevention of coccidiosis in lambs by the feeding of ground crude sulfur. It was added to the feed at the rate of 0.5 to 1.5 per cent of the total volume of chopped alfalfa and ground corn moistened with molasses for seventy-two continuous days. "A very practical method of controlling the disease," says C. D. Lowe, in *Successful Farming*.

Very finely powdered swine hoofs have the nutritive equivalence of casein in certain respects in the feeding of chickens. In tests made at the Wisconsin Agricultural Experiment Station, there was no decrease in the rate of growth when 5 per cent of meat meal or of fish meal was replaced by 2.5 per cent of powdered swine hoofs, and but slight decrease when both were so replaced.

Trichinosis in the United States and Canada

In Canada, a survey of the incidence of human trichinosis, similar to those made by the United States Public Health Service, revealed the presence of the infection in 1 out of every 75 Canadians examined, compared with 1 to 6 for Americans. In garbage-fed hogs in the United States, trichinosis is 30 times greater than in Canada, where only cooked garbage is fed to hogs. A survey made by the USDA disclosed a similar low incidence of the infection among American hogs fed cooked garbage.

Some Observations on the Relationship of *Alternaria Tenuis* to Canine Eczema

THEODORE ALLEN, D.V.M.

West Hempstead, New York

DURING the past two years, claims have been made that the common grass mold, *Alternaria tenuis*, is the principal etiologic agent concerned in canine eczema or so-called "summer itch." These claims have apparently been based on the reported finding of the mold spores in 95 per cent of skin scrapings made from large numbers of acute and chronic cases of canine eczema. However, no vegetative forms of the mold have been described as present in the lesions.

Stimulated by the aforementioned claims, and because of the widespread interest in the subject, the writer made skin scrapings during the late summer of 1944 to determine the presence of *A. tenuis* spores. In 100 per cent of the scrapings from eczematous dogs, pollen granules, identified as ragweed, were found but in only 25 per cent of the scrapings were the mold spores found. The same proportions were found in skin scrapings from normal dogs. Subsequently, the dust from venetian blinds, floors, etc., was observed to contain the pollen granules and mold spores. A glycerin-coated slide, left outdoors for eighteen hours, showed 8 to 10 pollen granules per low power field and about 1 mold spore to every 2 or 3 low power fields.

The drawing (fig. 1) shows a ragweed pollen granule and a spore of *A. tenuis* as observed under the microscope. I have not found it necessary to use potassium hydroxide solution in preparing slides of skin scrapings for examination, as plain water seems to be satisfactory. After these bodies have been once observed, they can be detected easily under the low power.

Reference texts show that during certain seasons of the year, the atmosphere contains enormous numbers of pollens and spores which are well known as etiologic agents in human asthma and hay fever. The amount of these substances varies with the season, geographic location, and meteorologic conditions. At the height of pollination, 5 to 10 millions of grass pollen gran-

ules settle on an area of 1 square meter in twenty-four hours. This number is small compared to the number of weed pollen granules and mold spores similarly found. These agents are ubiquitous, being found at altitudes as high as 8,000 feet and as far as 300 miles from land. Thus, the spores and pollen granules settle everywhere, and



Fig. 1—Ragweed pollen (left) and spore of *Alternaria tenuis* (magnified).

may be found on the hair coats of dogs regardless of the presence or absence of a dermatitis.

These observations are presented to show that the finding of mold spores on dogs or, as I have observed, of pollen granules, is to be expected during the appropriate (summer) season. An idea of their prevalence can readily be obtained, as already noted, simply by exposing glycerin-coated slides to the air for twenty-four hours. Hence, the claim that canine eczema is caused by *A. tenuis*, by reason of the presence of the mold spores, is hardly logical, inasmuch as normal dogs reveal the same findings. By the same reasoning, pollens could be cited as the cause, or even fleas, which are present in a high percentage of eczematous dogs. At any rate, it appears that no facts have been presented which prove conclusively that eczema of dogs is a mycologic dermatitis.

However, there is the possibility of spores and pollens acting as allergens to induce eczematous conditions in dogs in somewhat the same way as these agents are related to respiratory hypersensitivities of man, but this is mere conjecture and can be

proved only by competent investigation involving scratch tests and passive transfer techniques. Naturally occurring hay fever in dogs, due to ragweed pollen, has been reported by Wittich (J. Allergy, 12, (1941): 247). This may explain the sneezing frequently observed in normal dogs in the summer season.

In conclusion, the claim that *A. tenuis* is the principal cause of canine eczema has not been substantiated, in my opinion, by adequate proof.

DDT as a Flyspray in Cattle

Among the tests conducted by the U. S. Bureau of Entomology and Plant Quarantine to appraise the merits of DDT as an insecticide was a trial carried out on range cattle in Texas during the summer of 1943. Three tests were made on the control of *Lyperosia (Siphona) irritans* L. under range conditions. The spray used contained:

DDT	5%
Sesame oil	10%
Trichor trifluoroethane	20%
Methyl chloride	65%

Fourteen cattle carrying 500 flies each were treated on May 14. They carried no flies the next day, 1 to 5 flies on the fourth day, 3 to 6 flies on the seventh day, and 200 to 500 flies on the fourteenth day, whereas there were about 1,000 flies on each of the checks.

Fifteen cattle, in an adjoining pasture, carrying 500 flies each and treated May 14, had no flies the next day, five of the 15 animals had 3 to 8 flies on the fourth day, 1 carried 10 to 15 flies, and the other 9 none. Only 3 flies were found on the seventh day, but on the fourteenth day there were from 200 to 500 per animal. In another pasture, 5 yearling bulls carrying from 800 to 1,200 flies were treated over the back and head on May 15. There were but 4 to 5 among them on the third day and 6 flies on the seventh day. On the thirteenth day, there were 30 flies per animal, while a bull in an adjacent pasture 100 yards away carried 150, although treated with a popular oil spray the previous day. The control herd, half a mile away, carried 1,500 to 2,000 flies.—R. W. Wells: *DDT as a Flyspray on Range Cattle*. Rev. Applied Entomol. 32, (Nov. 10:44): 203-204.

Chastek Paralysis in Dogs

Much has been said recently about antivitamin factors contained in certain drugs. The following case reports tend to show that antivitamin factors are also sometimes encountered in certain diets normally used for dogs.

Case 1.—This patient, a Doberman Pinscher bitch, was being treated for a rundown condition following a severe sea sickness encountered while aboard ship en route to the South Pacific. Treatment consisted of three capsules multiple vitamin (American Pharmaceutical Co.) and 2 cc. nicothol-B (Pitman-Moore), subcutaneously per day. The diet included raw meat (horse meat and beef) of New Zealand origin. The meat arrived frozen and evidently had been in that state for some time. The meat was thawed out and mixed with graham crackers. The patient showed no improvement and in about two weeks began showing symptoms of posterior paralysis. An examination of the muscles showed no pain or palpation. The appetite remained normal as were the bowel movements, temperature, respiration, and pulse; urine, blood examination showed no pathologic change. The condition grew steadily worse until the patient could no longer stand.

Case 2.—This patient, a Doberman Pinscher bitch, was suffering from a slight infection of the foot and was receiving the same vitamin treatment as case 1. This patient also developed the same type of paralysis. I again failed to make a diagnosis. Vitamin therapy was then discontinued, it being my belief that an avitaminosis was not present due to the large amount of vitamin that had been administered.

Case 3.—This patient, a Doberman Pinscher male, was brought to the sick bay exhibiting a slight stagger in gait. Other dogs were reported to be slightly weak in the hind quarters when worked in the field by their handlers. Fearing a virus infection of the central nervous system, smears were made of the cerebrospinal fluid of cases 1 and 2. These showed no pathologic change. A culture was then made which proved sterile. I was of the opinion that there was no virus infection present, due to the lack of fever, the above findings, and the fact that that condition had been present for about ten to twelve days, assuming that death or recovery should have taken place by this time had this been the case.

Dr. R. J. Goodlow (Lt., USNR), who had been doing the laboratory work for me, was very much interested in the cases and without his help the final diagnosis would have been difficult. We discussed the diet, considering the possibility of a vitamin de-

ficiency, but were skeptical of this because of the previous vitamin therapy that had been given to cases 1 and 2. Goodlow then recalled that while working with Green, a condition of similar nature was observed in Silver Foxes and Green, after futile attempts to isolate a filtrable virus, had discovered an antivitamin factor contained in a certain species of fish in the diet and that recovery was made after a change in the diet. Green had called this disease Chastek paralysis. We made this our tentative diagnosis and later our final diagnosis.

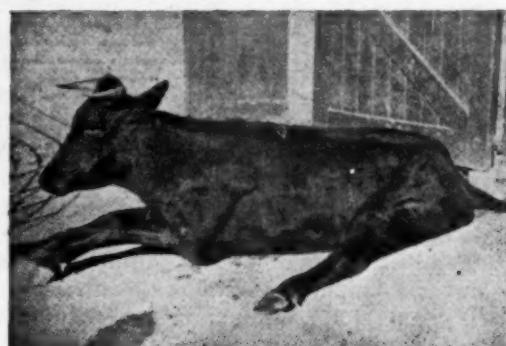
The meat was then cooked before being fed. The vitamin therapy was not renewed so as to establish the fact that an avitaminosis existed. Case 3 and those slightly affected recovered in about four days. Cases 1 and 2 showed no improvement. The vitamin therapy was renewed on these cases and within less than a week both were able to walk which they had not been able to do for the last two or three weeks. Recovery progressed to completion for case 1 and in case 2 until only a stiffness in the hind quarters remained. This stiffness was probably due to the long period of affliction.

The diet containing raw meat had been fed for about four weeks previous to the outbreak of paralysis. That an avitaminosis was present was proved by the failure of cases 1 and 2 to recover until renewal of the vitamin therapy, following the cooking of the meat. The existence of an antivitamin factor contained in the raw meat was probably due to the fact that the onset of the condition came while cases 1 and 2 were receiving ample vitamin to prevent or even overcome an avitaminosis. It appears that cooking probably destroyed this factor as was evidenced by the recovery of case 3 and others following the change from raw to cooked meat. I would like to receive any comments, criticism, or suggestions on this report.—*Lt. Wm. W. Putney, USMCR, Veterinarian, Provisional War Dog Co., 3rd Marine Division, in the Field.*

In 1944, shortage of meat was offset both by the growing of more livestock and liquidation of animals on hand. As the liquidation cannot be repeated in 1945 and the demand outlet is increasing, the outlook is quite pessimistic, the *National Live Stock Producer* believes.

Botulism in Cattle

One-third of a drop of *Bacillus botulinus* toxin will kill a cow. Not startling, but nevertheless a reminder that all the toxin of



—After C. T. McKenna, 1944

Fig. 1—Cow in the paralytic state of botulism.

the genus *Botulinum* is not bottled up in canned food. That's the thesis of C. T. McKenna, B.V.Sc., in the *Journal of the Department of Agriculture of South Australia* (Sept., 1944), pointing out that this deadly poison can lurk in hay stacks, moldy fodder, heaps of chaff, carcasses of animals, or any decomposing material suitable for this ubiquitous organism to multiply, of which there is no lack around the farm. The bottom of forage stacks where mice, rats, birds, and vermin crawl to die and decompose can be toxic for livestock. [Oat sheaves stacked for the winter feeding of horses on the large farms of the Northwest have been incriminated as the cause of outbreaks of botulism.]

In Australia, before the widespread use of phosphatic fertilizer on cropped land and pastures, bone chewing and resulting botulism were quite common. It was called "dry bible," or "toxemic paralysis" and has been confused with mineral and protein deficiency, yet true botulism is not uncommon among dairy cattle. The spores of the organism are widespread, the opportunity for their growth numerous, and their chances of getting into the digestive tract of livestock are legion.

The first cases of an outbreak die of acute botulism in a few hours to a day or two. Later cases, obviously from having taken smaller doses, linger from one to seven days, showing stiffness, difficulty in getting up, and progressive paralysis, including difficulty in prehension and deglutition.

Sunken eyes, rough and dry coat, variable appetite, and absence of pain and fever are other symptoms. Mortality is high and convalescence prolonged.

There is no medicinal treatment of merit. Annual immunization with alum-precipitated botulinus toxoid protects against *B. botulinus* type C but not against A, B, and D types. Vaccination should be done a month before the disease usually makes its appearance. Bone chewing is controlled by feeding mineral supplements of calcium and phosphorous. Access to spoiled feed is prevented. Depraved appetite occurs most frequently in the summer and fall of dry seasons. Dicalcium phosphate and salt, 2 to 1, are given as a lick, and for hand-fed stock 2 oz. of this mixture is given twice daily in the feed. Mineral supplements should be given continuously during the dry season.

Penicillin in Tetanus

Buxton and Kurman, *Newport News, Va. (J. Am. Med. A., Jan. 6, 1945)*, report the recovery of 2 cases of acute tetanus treated with penicillin and antitoxin. The one, a Negro woman 22 years old, stricken after a period of incubation of eleven days, recovered in thirty days; the other, a Negro boy of 9, stricken seven days after sustaining a punctured wound in a toe, was ready for discharge in nineteen days but was kept at the hospital until the twenty-fifth day, at which time he was entirely cured. The sedatives dihydromorphinone, seconal sodium, chloral hydrate, tribromoethanol, and sodium bromide were used as the symptomatic indications. The unitage of penicillin and antitoxin was 20,000. The varied day by day dosage is described. The significance of these recoveries lies in the severity of the attacks and the short periods of incubation—forecasters of high mortality.

The Use of Gentian Violet in the Treatment of Diarrhea

In a colony of red spider monkeys, which had been kept closely confined on an inadequate diet, diarrhea was common. As a preliminary to attempts to control this condition, cultures of the stools of several of these animals were made. From 1 animal, a culture of organisms was apparently nonmotile but

seemed to be one of the *Salmonella*. After many passages through semisolid agar, they were sufficiently motile to flocculate and were finally identified as a monophasic-specific strain of *Salmonella paratyphi B* as they were tartrate-negative and had the formula of IV, V, XII; b-.* Several months later as there was an epizootic of bacillary dysentery (Boyd 88) in the colony, several courses of treatment were given. The first was sulfaguanidine at a level of 0.25 Gm. per kilogram per day for five days. As this was not effective, it was repeated. Later a similar course of sulfasuxidine was given in conjunction with a low fiber diet. Since then, there have been no active cases of bacillary dysentery. From the stool of 1 animal (spider 64), however, there was isolated an unknown *Salmonella*, so this animal was given a course of sulfadiazine (0.08 Gm./kg./day for five days) and later a course of sulfathalidine† (0.25 Gm./kg./day for five days) but to no avail. By this time, it had been possible to identify the organism as the same one which had been isolated previously. We do not know that the organism first isolated was from spider 64 but consider it likely, as, although coprophagia was common at that time and the animals were not kept in individual cages, we were not able to isolate the organism from the feces of any of the other animals. After the sulfadiazine treatment, the entire colony was given gentian violet (3 mg./kg./day for six days), since *Strongyloides stercoralis* had been discovered in the stool of 1 animal. During this treatment, the *Salmonella* disappeared from the stools of spider 64. Complete elimination was attested by four negative stool cultures, which had been made at intervals of ten, twelve, and fifty days. It is suggested that gentian violet should be considered in the treatment of diarrhea caused by or associated with sulfa-resistant *Salmonella*.—George Clark, Ph.D., *Yerkes Laboratories of Primate Biology, Orange Park, Fla.; Mun S. Quan, and Mildred M. Galton, M.S., Bureau of Laboratories, Florida State Board of Health, Jacksonville, Fla.*

*We wish to thank Dr. P. R. Edwards, Department of Animal Pathology, Kentucky Agricultural Experiment Station, Lexington, Ky., for identifying these organisms.

†The sulfathalidine was supplied by Sharp & Dohme, Inc.

Chemotherapy of Tuberculosis

One of the liveliest medical projects of this hour is the search among the new germicides for one that will cure tuberculosis. Sulfonamides, sulfones, penicillin, and other antibiotics are under investigation on a large scale for evidence of any curative properties they may possess; and definite plans for establishing their precise merit, through experimental infections of laboratory animals and human patients, are being laid out. Not since Möllgaard's treatment (sanocrysine) was being dramatized some fifteen years ago has drug treatment of tuberculosis been as earnestly discussed in medical literature.

The subject is of interest in veterinary medicine, since a remedy of value in a chronic bacillary infection as tenacious as tuberculosis would indeed be useful in animal medicine. So far as tuberculosis itself is concerned, the veterinarian's swift therapy of the abattoir is not likely to be replaced unless a sure and rapid cure in the incipient stage is discovered. In "open" animal tuberculosis, there can never be a better doctor than the knacker. But what we set out to say here is that our own Dr. William H. Feldman, of the Mayo Foundation, is foremost among the fact finders in this promising research. May his work escape the smudge of premature exploitation.

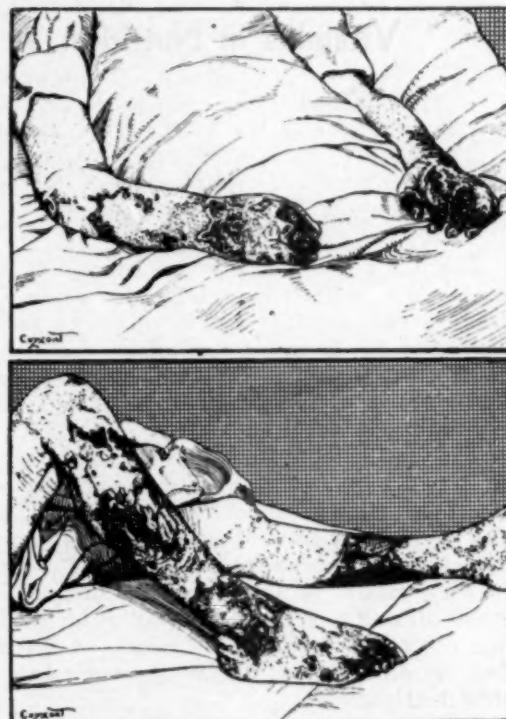
Rabies in New York City

Rabies has jumped the barrier of the borough of Bronx and spread to the rest of New York City, and, says the *Journal of the American Medical Association* "concerted nationwide efforts at its elimination through quarantine are needed." One New York woman bitten by her pet has already died, and the police department has been ordered to issue court summonses to owners of dogs who allow their dogs to run at large. Antirabies quarantine of dogs is in force throughout the city. Meanwhile, one marvels at the silence of certain metropolitan newspapers whose columns laid the foundation of the present outbreak, by cultivating public sentiment against the scientific handling of the most horrifying of all diseases.

There is no astringent strong enough to shrink a big head.

Sulfonamide Toxicosis

Readers of the JOURNAL will recall that ever since the sulfa drugs came upon the scene, the Pasteurian doctrine that germ killers are also cell killers has been mentioned from time to time. That is, if these drugs are going to kill germs *en masse*



—From *Medical Times*

Fig. 1 and 2—A Reaction to Sulfathiazole.

they will have to have the remarkable property of chasing out the vermin without tramping on the grass. In other words, throwing sulfonamides around like talcum powder is no better therapy than forgetting to weigh out the strychnine. Herewith are pictures taken from *Medical Times* of the arms, hands, legs, and feet of a patient dosed with sulfathiazole. Like all other chemotherapeutic agents, these drugs are not as harmless as formerly predicted. In fact, because of the germ killing power they do have, they are more of a strain on medical ingenuity than the mine run of local and internal germicides. Veterinarians writing for lay publication may be doing a disservice if they speak glibly of the "spectacular results" obtained from sulfa drugs.

NUTRITION

MATERIAL FURNISHED BY THE COMMITTEE ON NUTRITION

Vitamins in Nutrition in Relation to Animal Disease

The following are excerpts by Dr. C. C. Hastings, chairman of the Committee on Nutrition of the AVMA, from an address by T. S. Sutton, professor of animal husbandry, The Ohio State University, and associate in research, Ohio Agricultural Experiment Station, given before the Veterinary Medical Association of New Jersey in February, 1944.

There is nothing new in the concept that inadequate nutrition results in disease. Dietary remedies for scurvy, beriberi, and rickets were known long before the discovery of vitamins. Vitamins resemble hormones in their behavior, *i.e.*, they are regulatory in function.

The deficiency is the disease, although in most instances the disease is recognized by clinical abnormalities. The deficiency may be present in any degree from sub-clinical to pronounced. It may occur in such partial forms as to make diagnosis most difficult. We need better guideposts for assessing the vitamin values of feeds and better means of diagnosing early vitamin deficiencies.

There seems to be a relationship between the level of vitamin A intake and the rate of synthesis of ascorbic acid in animals that synthesize vitamin C. It has been shown that the feeding of an iodine supplement results in a decrease of ascorbic acid in the blood of cows. With ascorbic acid playing an important part in reproduction, this suggests that the matter of iodine feeding could easily be overdone.

Early students of the physiology of digestion in the ruminant regarded the rumen as a storage place for coarse, rough feeds. Since the middle twenties, however, evidence has rapidly accumulated showing that a number of dietary factors necessary for the cow are synthesized in the rumen by the microorganisms present. We should think of the rumen as a processing vat and a full comprehension of what goes on in it is necessary in order to understand the nutrition of ruminants. It is now definitely known that vitamin K and six members of

the vitamin B complex are synthesized in the rumen. These members of the vitamin B complex are thiamin, riboflavin, niacin, pantothenic acid, biotin, and pyridoxine. The synthesis of vitamins in the rumen explains the uniformly high level of these vitamins in cow's milk.

The rumen of the newborn calf is in a relatively undeveloped state. Experiments indicate that young calves may require some of the vitamins as supplements to their rations which later on are synthesized in the normally developed rumen. According to these experiments, calf scours of nutritional origin were successfully prevented by supplementing a skimmilk ration with niacin and vitamin A. When the rumen becomes functional, sufficient niacin is normally synthesized there to meet the animal's needs.

VITAMIN A DEFICIENCY

Vitamin A deficiency results in a variety of tissue changes and symptoms, making exact diagnosis difficult. Epithelial surfaces are particularly subject to change. These epithelial changes weaken the defense barriers and invasion of infective agents follows. For example, vitamin A deficient animals frequently die of respiratory infections. It should be remembered that these infections are secondary effects of the deficiency. A keratitis frequently develops which is almost identical in clinical aspects to infectious keratitis. Nictalopia or night blindness is one of the earliest symptoms. This may escape unnoticed unless the animal is tested in dim light. Permanent blindness in young calves, re-

sulting from partial closure of the optic foramina and stricture of the optic nerves, is not common.

A lack of vitamin A is one of the outstanding causes of sterility in farm animals. Poor reproductive performance is a common occurrence among animals fed rations low in vitamin A. Complete sterility has frequently been experimentally produced in both laboratory and farm animals. In the male, there is sexual inappetance, decreased sperm production and, in severe deficiency, either partial or complete degeneration of the germinal epithelium of the testes. In the female, heat periods may be lacking or intermittent; pregnancy may occur but followed by abortion or the birth of weak offspring which soon die, particularly if no food other than their mother's milk is supplied.

Requirement.—The quantity of vitamin A required for normal performance of an animal is about 3,000 I. U. per 100 lb. of body weight, if supplied by vitamin or about 3 to 4 times this amount if supplied by carotene.

VITAMIN D DEFICIENCY

Since vitamin D regulates the metabolism of calcium and phosphorus, these elements must be considered in any discussion of deficiency disease. The metabolism of calcium and phosphorus is dependent upon several factors:

- 1) The amount or level of Ca and P in the ration.
- 2) The ratio of Ca:P.
- 3) The amount of vitamin D or ultraviolet radiation.
- 4) The activity of the parathyroid gland.

The vitamin D requirement is dependent upon some of these factors—for example, the Ca:P ratio. A calcium:phosphorus ratio of 1 to 2.1 seems to be about ideal, although rations containing a far greater proportion of calcium have been fed without experiencing difficulties. When the amounts of these elements in the ration are unbalanced, the vitamin D requirement is increased.

Vitamin D deficiency is characterized by stiffness, swollen joints, a humped-back, buck-kneed stance, and spastic seizures in young animals—fragile bones and stiffness in older animals. There is a marked increase in blood phosphatase in vitamin D

deficiency, regardless of the age of the animal.

Requirements.—The vitamin D requirement for calves has been carefully worked out and is 400 to 500 I. U. daily per 100 lb. of live weight. Requirements for other animals are not definitely known but such experiments as have been conducted indicate that the requirements are of the same order as that of calves.

VITAMIN C—ASCORBIC ACID

Vitamin C or ascorbic acid is synthesized by all farm animals and, under usual circumstances, in sufficient amounts to meet all body needs. The response of certain sterile males and shy breeding females to ascorbic acid therapy indicates that, under certain conditions, the synthesis is insufficient to provide ample amounts. There is evidence that the rate of synthesis is conditioned, among other things, by the adequacy of the vitamin A intake.

The amount of ascorbic acid in the blood of the newborn calf is much higher than that in later life, and there is some evidence that ascorbic acid synthesis does not begin immediately. There is limited evidence that the administration of from 1/4 to 1/2 Gm. daily by the mouth for the first ten to twelve days will prevent the loss of calves from navel infections and peritonitis.

The use of ascorbic acid in the treatment of animals exhibiting poor breeding performance is limited in scope. A good signpost indicating ascorbic acid treatment in the male is sexual inappetance. In the case of females, those free from infections and with regular heat periods but which fail to conceive on repeated breeding are likely subjects for treatment. [See the JOURNAL (Dec. 1943) for directions.]

VITAMIN B COMPLEX

Under ordinary circumstances, the micro-organisms of the rumen synthesize sufficient of the vitamin B complex to meet the needs of all ruminants. From a therapeutic standpoint, there is evidence that the oral administration of from 50 to 100 mg. of niacin daily is helpful in the control of scours in the young calf.

In the case of swine, the picture is quite different. Synthesis of the various members of the B complex by microorganisms in the digestive tract is either lacking or insufficient to provide adequately for the

animal's needs. At any rate, deficiencies of several members of the complex have been experimentally produced, and there is considerable evidence that certain of them occur under farm conditions. Experiments have shown that thiamin, riboflavin, niacin, pantothenic acid, and pyridoxine are essential in the nutrition of the pig.

THIAMIN

Rations used to produce thiamin deficiency experimentally are rather unusual, but the possibility exists that very poor rations may be deficient in this factor.

As the deficiency develops, the pigs lose their appetites, there is an unsteadiness of gait indicating leg weakness and, in some cases, a typical beriberi paralysis. Practical requirements seem to be about 1 mg. per 100 lb. of body weight, daily.

RIBOFLAVIN

The rations used to produce riboflavin deficiency are also unusual, but again poor rations may be deficient in this factor.

Pigs on riboflavin deficient rations gain slowly, have semifluid feces, become crippled and walk with difficulty.

The daily requirement for pigs between 40 to 140 lb. in weight has been established at between 1 and 3 mg. daily per 100 lb. of body weight.

NIACIN (NICOTINIC ACID)

Veterinarians are particularly interested in this vitamin because of its possible relationship to necrotic enteritis in swine. There is a degree of similarity between the symptoms of necrotic enteritis in swine and pellagra in man. Skin lesions and diarrhea are common to both diseases. Necrotic enteritis occurs with greater frequency among pigs fed rations composed largely of corn, and pellagra in man has been described as a disease of corn-eating peoples.

At the present time, there is considerable difference of opinion as to the cause of necrotic enteritis. The cause is commonly attributed to the organism *Salmonella choleraesuis*. There appears to be justification for the conclusion that this organism is involved. However, there is also evidence that the nutrition of the pig is also involved. Pigs on rations composed largely of corn have developed symptoms identical to necrotic enteritis and have

been cured by the administration of niacin. On the other hand, pigs artificially infected by feeding cultures of *Salmonella choleraesuis* were not protected from developing the disease by feeding niacin.

One school of thought recognizes the possibility of two diseases—one of nutritional origin, which they prefer to call swine pellagra, and the other, infectious, which has been called salmonellosis. It is also thought that these conditions may develop concurrently or one may predispose the other. Further work is desirable in order to clarify the relationships involved in the cause, cure, and prevention of this disease. Differentiation between pig pellagra and salmonellosis seems logical. The results to date indicate that niacin is effective in preventing pig pellagra and is also of value in treating salmonellosis, in so far as it enables the pig to maintain its body defenses.

The pig's requirement for niacin is not definitely known; 13.7 mg. per day per 100 lb. of body weight has been suggested to protect pigs from pellagra. However, therapeutic doses of from 50 to 200 mg. per day per pig are often used.

PANTOTHENIC ACID AND PYRIDOXINE

These two members of the vitamin B complex will be discussed together, because they both seem to be involved in a disease frequently seen under field conditions. Hogs in drylot, fed a ration of corn and tankage, frequently develop a rough hair coat, make unsatisfactory gains, and develop a peculiar gait commonly referred to as "goose stepping." Present indications are that deficiencies of both pantothenic acid and pyridoxine are involved.

About all that can be said to date is that both of these vitamins are required in the diet of pigs. Work, making possible an estimate of the quantity required, indicates that somewhat less than 5 mg. of pyridoxine, and between 8 and 12 mg. of pantothenic acid per 100 lb. of body weight are needed.

CONCLUSION

In conclusion, it is well to remember that the experimental work regarding the relationship of the vitamins to animal disease is still in its infancy. Also, that under field conditions multiple deficiencies, particularly in the case of the B vitamin,

are more likely to occur than deficiencies in single specific vitamins.

It is difficult to make up for a roughage deficiency by changing or improving concentrate ration.

Appetite is at least in part controlled by body needs.

What might be considered a good fattening ration is not necessarily a complete ration.

Niacin and Ascorbic Acid Again Available

The War Food Administration announced on January 16 that niacin (nicotinic acid) and ascorbic acid (vitamin C) may be obtained, on application to the Agricultural Adjustment Agency of WFA, for use in veterinary medicines and livestock feeds. Because of the very short supply, these two vitamins have not been available for some time to the manufacturers and mixers of the items in question.

The allocation of niacin for 1945 totals 18,187 lb. and of ascorbic acid 2,424 lb.

Stocks of low potency vitamin A oil are ample and its use is, therefore, not restricted. Thiamin (vitamin B) and riboflavin are not under allocation because adequate supplies are available.

Yellow corn, 11 to 14 lb. daily, not fortified with a good quality of roughage, does not supply sufficient vitamin A for feeder steers, according to tests made by the USDA at Beltsville, Md. When the sole roughage was straw, clinical vitamin A deficiency developed: blindness, convulsions, stiffness, edema. Blood analyses disclosed low carotene and vitamin A values, which were absent in animals fed a good quality of hay and silage.—*Thomas H. Bartilson in the Country Gentleman*.

To get first hand experience on the care and nourishment of the young, one should be a sheep herder.

A protein supplement that contains 25 per cent of a good grade of ground alfalfa is usually adequate to prevent vitamin deficiencies in hogs.

Nutrition Notes

The cutting and curing of hay are operations closely associated with the knowledge of animal nutrition. Practical understanding of them is a part of veterinary medicine.

Feeding cows well during the dry period is an important but neglected measure in dairy farming that veterinarians should point out whenever occasion permits.

Big necked calves and hairless pigs are two of the common manifestations of iodine deficiency. In the goiter belt, supplementing the feed of farm animals with iodine is a "must do."

The increasing interval between the production of food and its consumption, due to the mass agricultural production required to meet the demands of larger urban populations, have revolutionized the methods of preserving the nutritive value of the human dietary.—*From Nutrition Reviews*.

With rare exceptions, the cause of anemias in the young can be traced to the feeding and care of the dam during gestation, obviously to hematopoietic deficiency of prenatal or neonatal origin.

Anasarca is most often observed in cattle receiving a heavy carbohydrate diet. It is seldom seen in dairy or breeding cattle regardless of the severity of avitaminosis A present. The physiologist has not explained why the combination of excessive carbohydrate intake and vitamin A starvation increases the permeability of the tissues.

Since the advent of grass silage, prenatal rickets is quite common. Heretofore, during the winter months dairymen have depended largely on sun-cured hay to supply vitamin D to dairy animals. With silage supplying most of the roughage, vitamin D deficiencies are common during the winter months. This deficiency is reflected in the unborn calf in the form of rickets.

EDITORIAL

How Many Is Too Many Veterinarians?

In view of the vast areas in the United States where people carry on without any competent veterinarians at all, and the practically untouched field of scientific food hygiene—from farm to kitchen—it would seem that the debate over enlarging the veterinary service in scope and in personnel should be quite one-sided, granted that veterinary medicine has, or ought to have, the stellar rôle in animal health and food inspection.

FACTS TO PONDER

Were one writing to edify the uninformed, nonmedical readers, this would be the occasion to bring up the old argument that in all periods since Creation, human populations, assembled into nations, have survived or perished according to the kind and quantity of food they were able to provide. The informed veterinarian himself is inured to scanning history in vain for factual theses stressing the inseparable relation between man's progress and his food. In our lore, it is not even alien to point out that the raising of animals for food delineates the whole era of human progress. The early occidental nations were confined to the narrow isotherm of the Mediterranean for some thirty or more centuries, until the coming of masonry and artificial heating enabled their successors to thrive in the more rigid climates, where the progressive nations of the modern world prospered by the cropping of land and the protection of livestock against the invasion of harmful agencies. Claiming to have participated in human development by guarding the welfare of domestic animals is, strangely, less important to the veterinary profession than teaching the human being of 1945 the part animals and animal products play in his every day life—his wealth, his health, his stature, his culture, his happiness, and in the defensive strength of his chosen country. Anyhow,

the debt owed to the human-animal companionship is the longest unpaid bill on record.

ALARM SOUNDED

To maintain good health among our ever-increasing animal population, and to insure that the food they produce comes to the platter as pure as the driven snow, so to speak, is a tremendous job for the handful of college-trained veterinarians now available to the American people. The number of them the United States should aim to provide has been estimated between 20,000 to 50,000, instead of the 14,000* now on the roll. In view of the latter figure, and on account of it, an appalling tonnage of meat, milk, butter, and cheese does not come to the table "without blemish"—to borrow an age-old term for wholesome food. Moreover, quoting Sir J. C. Drummond, of the British Ministry of Food, at the Hot Springs Conference last year, "world production of food is not now, and never has been, adequate to meet world nutritional needs." This remark from a high source at a high place is the tocsin that the veterinary profession of the world should answer, since it has a qualitative as well as a quantitative intonation. This is a peace, not a wartime, scarehead. Such terms as mass famine, hunger, starvation, and sweeping disease, in common use nowadays, are extremes of great wars, which iron out with the coming of peace. They arouse the too complacent to take an inventory of their food supply only when war comes along and shortens the girth of the well fed. It is watchful attention to the food supply in normal times—the long pull

*Number of graduate veterinarians in United States prior to Dec. 1, 1942 (including those in armed forces).....	12,500
Number of graduates of accredited U. S. veterinary colleges from Dec. 1, 1942 to Feb. 2, 1945.....	1,510
	14,010

—that should be kept uppermost in mind, since, in all past times, this basic subject has been by-passed in the history of human progress, let us say, for reasons untold, to be polite.

THE REMEDY

Although spreading a competent veterinary service all over the country and in every niche where useful, in order to replace the untrained and near-trained engaged therein, is not going to be an easy task, it should nevertheless be the minimum objective of veterinary medicine, for, if we do not take our task that seriously, the people, as usual, will have to go on training replacements for positions (duties) we have failed to fill. The American people will not slumber in the presence of their 9 billion dollar livestock industry and the ramifying industries that stem therefrom.

It seems that the veterinary profession, here and elsewhere, has to choose between growing in numbers and affluence and staying small and mediocre or, perhaps, expendable.

TWO SCHOOLS OF THOUGHT

In the application of veterinary science, two schools of thought have reigned. The one envisions rolled up sleeves and overalls, the other kid gloves and top hats—in modern jargon, the technician who didn't go to college and the technologist who did. In the heyday of horse practice, one straddled the leg, yanked off the shoe, and pared the ailing hoof, while the other sent for the blacksmith and looked wise—with glove-covered hands. This seemingly prosaic simile has its counterpart in every veterinary activity we know today, with the difference that the one who works is called a technician.

The work of the veterinarian being what it is and unchangeable, the number of veterinarians a country needs will be governed a great deal by which one of these two schools wins. Perhaps one should embalm this piece until 1965—the time it generally takes for imperfections of the veterinary service to become conspicuous.—*L. A. M.*

If the countries we fight have any other motive than to take possession of you and yours, what is it?

Plant and Animal Doctors

Though not famously known in the book of general knowledge, plagues of plants and animals are truly great. As problems to solve for the benefit of mankind, they are numerous, tough, elusive, and some are ignored. If, on the surface, the animal doctor seems to have done the better job, perhaps the reason is that man is preponderantly carnivorous. Roast beef is more popular than corn pone.

Fools and Foolishness, a book published by School Activities Company, Topeka, Kans., contains a paragraph, condensed for *Science Digest*, that carries the title "Agriculture is Still in the Middle Ages," which sounds off about the \$10,000,000,000 business of farming not having made much headway controlling its pests, to wit: grasshoppers, weevils, termites, ticks, beetles, blights, smuts, etc., etc., in spite of modern machines, soil conservation, chemists, entomologists, distributive organizations. The pests keep gnawing at field crops, vegetables, and fruits and take big cuts annually. But better days are promised through quarantine, insecticides, seed treatment, insect enemies of other insects, dikes, dams, reforestation, irrigation, and the control of floods and droughts. Even artificial weather is among the promises for the postwar farmer. But, here, one must pause to ask, "What's the use to concoct remedies for the doctors of plants and animals?" It's futile to write "danger" on their requisitions. The people are too serenely unaware to appropriate real money for such things. If man depends upon the livability of plants and animals to survive, he doesn't know it. Anyhow, no one charged with making appropriations for the plant and animal doctors has ever won the purple heart for heroic conduct in that connection. Ten billion dollars a year! Compare that yardage with the amount of money legislatures have appropriated to preserve the sole source of human life in the years leading up to 1945. The paradox is that the plant and animal doctors still have to tell the people who they are and what they're cooking. Seems that pathologists are too new on the firing line to have made a deep and universal impression, and, except as duty directs, reviling the people is not the remedy. Teaching, preaching, researching, and organizing seems to be the only means to the end desired.

CURRENT LITERATURE

ABSTRACTS

Uncommon Poultry Diseases

Diseases not of major economic significance are apt to be omitted from the discussion of pathologic conditions of chickens and turkeys, yet poultry pathologists and veterinarians should recognize them, difficult or impossible as their diagnosis may appear. Among those described are (1) rupture of the gastrocnemius tendon, (2) burns from kerosene, (3) injury by coal-tar creosote oil, (4) visceral and articular gout, (5) water deprivation, (6) a perosis-like condition in turkeys, and (7) ulcerative enteritis (quail disease) of turkeys.—*K. L. Bullis and H. Van Roekel, Massachusetts State College, Uncommon Pathological Conditions in Chickens and Turkeys. Cornell Vet., 34, (Oct. 1944): 313-320.*

The High Cost of Fowl Leucosis

A million dollars a week, 52 million the year, is the price poultrymen pay for leucosis. The disease is responsible for more than 40 per cent of the mortality of pullets in their first year of life, according to Director Winton, of the Regional Poultry Research Laboratory, East Lansing, Mich. One method of control is to breed strains having lower death rates than unselected strains. Another method is raising chickens in complete isolation from adult birds during the first five months of chick and pullet life—a plan few poultrymen can afford to carry out, requiring as it does separate buildings, grounds, equipment and help. Cornell University poultry pathologists have shown that a satisfactory reduction in losses from leucosis can be obtained by isolating chicks from adult birds during the first two weeks after hatching. In a recent experiment there, it was found that the chicks brooded for the first two weeks at a distance of 110 ft. from the laying houses got so little exposure to whatever causes leucosis that the proportion of them which later succumbed to leucosis was less than half of that in the group which was brooded 40 ft. from the laying hens.

Losses in strains bred for resistance to this disease were much less than losses in strains bred for susceptibility to it. This difference held good whether the chicks got the severe exposure or the light one. The discouragement is that poultrymen do not have the time to

breed resistant strains, as much as that is desirable. Meanwhile, the combination of the best environment and genetic resistance is the best program, since, thereby, mortality is reduced from 5 to 6 per cent of the former death rate of 30 per cent in susceptible strains severely exposed.—[Dr. F. B. Hutt: "Watch that Distance—Breeding in Isolation Helps Control Leukosis." *The Poultry Tribune*, January, 1945, pp. 12 and 48.]

Avian Arteriosclerosis

The domestic chicken suffers from the form of arteriosclerosis most closely resembling that of the human being, according to a comprehensive study made by pathologists of Michael Reese Hospital of Chicago. Being omnivorous, like the human being, and subject to the same type of vascular changes as man, the domestic chicken is a useful experimental animal owing, more particularly, to the established fact that arteriosclerosis can be produced in chicks by cholesterol feeding. Though previously described in this country, Germany, and Japan, the incidence reported, 9 to 1, was much too low. The carcasses of adult roosters and hens obtained¹ at the time of evisceration in a commercial plant showed that the aortas of 24 out of 53 roosters (45%) examined had macroscopic lesions of intimal sclerosis. In 138 hens, the ratio was 41 per cent. Difference in method obviously accounts for the contrast. The whole aorta was stained with Sudan IV to disclose the presence of intimal lipid. The percentage of sclerotic aortas in roosters disclosed by this stain was lower than that in the hens and the lesions were confined to the descending (posterior) aorta. The interrenal site was common in the roosters, wherein 22 out of 24 were affected with a sclerosis expressed in the form of white or yellow ridgelike thickening of the artery together with raised plaques at the level of the arterial branchings. Lesions of the elastic coat occurred only in the aorta of the hens. Meticulous histologic lesions are described and illustrated with photomicrographs.

The onset of arteriosclerosis in fowl starts at the age of 5 to 6 months, and the incidence as in man increases with age. It was evident that the ratio may run as high as 75 per cent.

¹From E. M. Lynn, Committee on Food Hygiene, American Veterinary Medical Association.

Spontaneous arteriosclerosis of chickens was proved to be analogous to the experimental form induced by cholesterol feeding.—[D. V. Dauber, M.D.: *Spontaneous Arteriosclerosis in Chickens*. *Arch. Path.*, 38, (July, 1944): 46-51.]

Fox and Mink Distemper

Immunization

Distemperoid virus vaccine made by passing distemper virus through ferrets continuously over a period of years has been used on over 160,000 foxes on the Fromm ranches alone and its use by fox ranches throughout the United States for the control of fox distemper has been entirely successful. Commercial antiserums of dog origin do not adequately control outbreaks of distemper in foxes. They produce but a passive immunity of short duration which tends to prolong the duration of both the disease and the outbreak. While antiserum of fox origin may reduce the mortality one-third, the losses are still disastrous. While fox distemperoid produces a too violent reaction in mink, the immunization of the foxes where mink are kept, prevents infection to be passed to them, but, since mink need protection also, they should be inoculated with a killed virus vaccine that confers a short-term immunity. The need in mink is a live virus vaccine which is not yet available.—[R. C. Green, *Department of Bacteriology, University of Minnesota: Fur Animal Disease Prevention and Control—Distemper*. *The Fur Journal*, 11, (Nov. 1944): 3-5.]

Preserving Vitamins A and D in Alfalfa Hay

Reforms in hay-making are in order now that the vital ingredients of feeds are being measured. In the manner of speaking, there is a whale of a difference in the nutritive value of hay according to the method of curing. The leaching of carotene from alfalfa and other hays in the field is too generally acknowledged to need comment but that vitamin D is created by the sun at the expense of vitamin A is also a factor to consider. As pointed out by *Vitamin D Digest* (Nov. 1944), by making the curing time short with proper drying, the formation of vitamin D is restricted by the brief solar exposure. It appears that while vitamin D develops rather slowly in alfalfa, the minimum loss of carotene occurs in hay left in the swath for a few hours and then gathered into windrows until dry enough to mow away, which is usually on the second day. In the swath or windrow, vitamin D values rise rapidly from the third to the sixth day in the sun but such hay is brash and bleached out. In cocks there is little appreciable increase of vitamin D after the third day. In other words, to obtain a maximum D content, alfalfa must be over-dried at the expense of carotene. The suggestion to derive from these facts is to pre-

serve the carotene and to provide animals with vitamin D from other sources.

Cod Liver Oil Not Antigalactic

The belief that cod liver oil depresses lactation is widely entertained. The depression has been attributed to the unsaturated fatty acids of the C₁₈ and C₂₀ series. Similar beliefs have been declared for such highly unsaturated oils as corn oil and soybean oil, although no depression occurs when these are fed as grain or meal. Obviously, the difference can be explained by the rate of intake, that is, between absorbing a large amount in a short time and the gradual absorption from feed eaten. Cows receiving 5 to 7 oz. of cod liver oil in one dose each day for three to five days, showed marked depression of milk flow while the group fed the same amount divided in 12 feedings per day showed no similar effect. The conclusion must, therefore, be that the depressing effect of some unsaturated oils (fats) depends upon the rapidity of digestion and absorption.—[L. A. Moore, G. T. Hoffman, and H. M. Berry, *Maryland Agricultural Experiment Station, J. Dairy Sci.*, 27, (Aug. 1944): 640.]

Hepatic Glycogen—Maternal and Fetal

That the fetus has a physiology perhaps independent of maternal regulation was further confirmed by assays of the livers of fetuses and their dams for glycogen and acetone bodies. While hepatic glycogen was manifestly higher in the livers of the fetuses than in those of their relative dams, the opposite was true of acetone bodies, and furthermore, the author iterates, in respect to chlorine, nonprotein nitrogen, phosphorus, and serum calcium, that the fetus maintains levels of its own, to a cer-



tain extent independent of the levels in the dam. The glycogen and acetone determinations were made from the livers of 8- to 9-month old fetuses and those of their dams, taken at the time of slaughter, in obedience to standard methods. The results for liver glycogen showed an average level of 4.12 per cent for 20 fetuses and 0.25 per cent for their relative dams.—[C. B. Knott and W. E. Petersen, *Division of Dairy Husbandry, University of Minnesota: "The Relative Concentrations of Dam and Fetal Liver Glycogen. J. Dairy Sci., 27 (Nov. 1944): 953-955.*]

Books and Reports

Medical Occupations for Boys

This novel takes the reader into the innermost precincts of "medical occupations" and presents the author's impressions in the form of interviews with tycoons of each realm by father, mother, and son Joe, especially the latter, who is undecided about which way to head. The viewpoints—brief, broad, and well told—embrace physician, medical specialist, medical technologist, physical therapist, podiatrist (= chiropodist), roentgenologist, dentist, nurse, optometrist, pharmacist, and veterinarian, with illustrations showing these professionals at work. There would be little propriety here to pass judgment on any of the chapters save the final one entitled "The Veterinarian." A general practitioner, Dr. Hess, whose son is at a veterinary college, takes Joe into the byres, stables, and hoglots of his rural clients and also into his quite pretentious small animal hospital where the pet-owning townfolks are accommodated. During these visits, Joe is reminded that the farm animal is the foundation of veterinary medicine, that the veterinary art is as old as recorded history, and that its educational system has always kept pace with the other branches of medicine. For setting down these three facts, the tome earns a place on the shelf of anyone's library. The eternal fight against animal plagues, which gave the American people eight to ten billion dollars worth of healthy livestock and the removal of unfit food from the markets, is also woven into these conversations with Joe.

Books which furbish the humane, scientific, and economic facets of veterinary medicine are always received with mixed regret and gratitude within the veterinary profession—regret for the little conception man has of his dependence upon animals for his very existence and gratitude for the signs of awakening in this respect, which such books reveal. For members of the occupations concerned and for boys undecided as to their life's work, books in this category provide useful details not generally known. Thoughtful professionals recommend them for school libraries.—[*Medical Occupa-*

tions for Boys. Fourth Printing. By Lee M. Klinefelter, B.S., M.A. Cloth. 287 pages. 53 illustrations. E. T. Dutton & Company, New York. Price \$2.00.]

The Chemistry and Pharmacy of Vegetable Drugs

Notwithstanding the deluge of synthetics, vitamins (whole and fractionated), hormones, body-organ extracts and juices, vaccines, serums and antiserums, acridine dyes, mineral salts, sulfonamides, and antibiotics which have come into the therapeutic arsenal, it is surprising to be reminded that few, if any, of the vegetable drugs have been replaced by them. Moreover, while galenicals, mostly of secondary importance, still defy chemical analysis, the chemistry of the principal ones is an open book, and but few, once admitted into the official codexes, are ever dropped. There are 713 pages in the new British Pharmacopoeia. Such is the teaching in and between the lines of this book.

How to group vegetable drugs into categories for study has troubled authors of *materia medica* since time out of mind. Taxonomy, based upon natural orders, lacks practical value since the same order yields drugs of different chemical pattern and usage. Classification according to therapeutic application, the popular plan, is likewise not completely satisfying. Their uses vary widely, like cinchona for malaria in one patient and for sharpening the appetite in another, or belladonna to dilate the pupil and to relieve intestinal pain, to cite but two examples.

Chemical classification is deemed preferable as this puts the important alkaloids in the same grouping and these with the glucosides are by far the most important, since in these physiologically active principles lie the medicinal values of the given agents. Beyond these, however, the author finds it convenient to change to the therapeutic classification: diuretics, carminatives, bitters, rubefacients, anthelmintics.

One may evaluate this book as a warning that the newcomers into the field of medicine have not yet bypassed the old galenicals which have served mankind through the centuries and that the chemistry of drugs is not confined to any one group. The book will be found useful and interesting to the manufacturer of drugs, the student of drug dynamics, and, obviously, to the medical nihilist. There is only casual mention of veterinary medicine. In short, there is no perfect synthetic substitute for opium, cinchona, belladonna, digitalis *et al.*, in their respective rôles.—[*The Chemistry and Pharmacy of Vegetable Drugs. By Noel L. Allport, F.I.C., Research Chemist, The British Drug Houses, Ltd. Cloth. 252 pages. Illustrated. Chemical Publishing Company, Brooklyn. 1944. Price \$4.75.*]

Bovine Tuberculosis in the United States

The eradication of bovine tuberculosis was brought into being in 1906, when Congress passed the Meat Inspection Act. The livestock industry was imperilled. The percentage of carcasses retained on account of tuberculous infection increased. The peak was reached in 1917 when 40,746 cattle and 76,807 hogs were condemned, mostly in Chicago abattoirs, for tuberculosis by the meat inspection service—a waste of 35,000,000 lb. of meat during that one year. The loss fell not upon the packers, as may have been supposed, but upon the farmers, because such losses affect prices. An additional benefit derived from abattoir meat inspection

was that of locating the farms whence the animals came. The plausible course of establishing federal-state co-operation in respect to sharing the payment of indemnities led to the making of appropriations—from a federal one of \$75,000 in 1917 to federal-and-state ones totaling \$26,792,179 in 1935.

The intradermal tuberculin test was made official March 1, 1920, and county-area testing in 1921, at which time the late Dr. J. A. Kiernan was made chief of Tuberculosis Eradication and Dr. A. E. Wight, the present chief, his assistant. Early benefits were the premiums paid for hogs from the accredited counties, the popularity of

CALENDAR YEAR	HUMAN DEATH RATES FROM		CATTLE TESTED FISCAL YEAR ENDED JUNE 30	NUMBER REACTORS SLAUGHTERED	PER CENT	PER CENT
	RESPIRATORY TUBERCULOSIS	OTHER FORMS			BREEDING	SLAUGHTER
1900	180.5	21.4				
1902	162.6	21.9				
1904	176.2	24.5				
1906	155.6	24.6				
1908	144.0	23.6				.88
1909	137.7	23.4				1.27
1910	136.0	24.3				1.42
1911	132.7	26.5				1.57
1912	125.0	24.7				1.98
1913	123.0	24.8				2.02
1914	123.5	23.7				1.98
1915	123.5	22.8				2.11
1916	119.9	22.2				2.35
1917	124.6	22.5	20,101	645	3.2	2.11
1918	128.6	21.4	134,143	6,544	4.9	1.80
1919	107.5	18.1	329,878	13,528	4.1	1.57
1920	97.0	17.0	700,670	28,709	4.1	1.62
1921	85.6	13.3	1,366,358	53,768	3.9	1.62
1922	84.3	12.1	2,384,236	82,569	3.5	1.76
1923	81.3	11.5	3,460,849	113,844	3.3	1.75
1924	78.0	11.7	5,312,364	171,559	3.2	1.56
1925	75.9	10.8	7,000,028	214,491	3.1	1.51
1926	76.6	10.7	8,650,780	323,084	3.7	1.41
1927	71.4	9.5	9,700,176	285,361	2.9	1.15
1928	70.3	9.0	11,281,490	262,113	2.3	1.04
1929	67.6	8.4	11,683,720	206,764	1.8	1.00
1930	63.4	8.1	12,845,871	216,932	1.7	.75
1931	60.7	7.5	13,782,273	203,773	1.5	.62
1932	56.4	6.5	13,443,557	254,785	1.9	.49
1933	53.6	5.9	13,073,894	255,096	2.0	.42
1934	51.2	5.4	15,119,763	232,368	1.5	.36
1935	49.8	5.1	25,237,532	376,623	1.5	.24
1936	50.6	5.0	22,918,038	165,496	.7	.18
1937	49.0	4.6	13,750,308	94,104	.7	.14
1938	48.9	4.3	14,108,871	89,359	.6	.11
1939	42.6	3.9	11,186,805	60,338	.5	.10
1940	41.6	3.7	12,222,318	56,343	.4	.08
1941	40.8	3.7	12,229,499	40,702	.3	.07
1942	39.6	3.5	10,983,086	28,008	.26	.061
1943			9,308,936	17,167	.18	.048

such counties among buyers of dairy cows, and the higher prices paid. The first county in the United States was officially accredited July 23, 1923, and the last county Nov. 1, 1940.

In 1923, there were 17 accredited counties located in Michigan, North Carolina, Indiana, and Tennessee. In 1928, all of North Carolina was accredited.

During the early period, there was much opposition to the tuberculin test in many communities. Its accuracy was challenged and, in addition, other erroneous charges were made, such as causing abortion and lessened milk flow. Distinguished figures in the public health service stressed the importance of the program, and many large cities passed ordinances requiring that not only milk, but butter also, be derived from tuberculin-tested cows. During the entire period (1917-1940), the campaign was directed by Chief John R. Mohler of the U. S. Bureau of Animal Industry.

The author reviews briefly the perplexing "no-lesion" problem among cattle exposed to tuberculous chickens, which are common in the north central states. Although 1917 is generally named as the year when bovine tuberculosis eradication began, the campaign did not start in earnest until 1923, when area (county) testing was instituted. Since 1917, cattle tuberculosis has been reduced 96 per cent, human tuberculosis 78 per cent for the pulmonary, and 84 per cent for the nonrespiratory types. To claim that this remarkable reduction was due exclusively to bovine tuberculosis eradication would be stupid. The curious may, however, find the preceding table interesting. [H. R. Smith, General Manager, National Live Stock Loss Prevention Board, Chicago, Ill. *Bovine Tuberculosis in the United States: Its Conquest and its Effect on Public Health*. Am. Rev. Tuberc. 50, (Dec. 1944): 520-533.]

Tuberculosis Eradication Denounced

The author builds up a thesis intended to prove that bovine tuberculosis eradication is so much "monkey-shine," expensive, unscientific, and an actual detriment to mankind, and he is in part supported editorially. The statistics showing declines of nonrespiratory tuberculosis are dismissed as balderdash by figures collected from different countries. The precautions taken to forbid the use of unsterilized milk by American troops in the Army in Australia are dubbed "comical" on the ground that the death rate from that type of tuberculosis is only 2/100,000 in Queensland and 4/100,000 in the United States. [The latter figure should be 3.5.] Moreover, says the author, there is no more human tuberculosis on the coast of Natal, where the incidence in cattle is 30 per cent, than in other regions of the same country where cattle are practically tuberculosis-free (4/4,000). Quoting:

"Bovine tuberculosis is nowhere a curse but everywhere a blessing to mankind," meaning, of course, that tuberculous cattle are great vaccinators of the human race. Queensland is better off, tuberculously speaking, than the United States, where hundreds of millions of dollars were spent and where the stock-owner was caused a lot of worry, the author emphasizes. [The fact that American farmers are reimbursed annually in greater amounts than the total cost of the eradication program of forty-two years is not mentioned.] Briefly, the livestock industry of the world is advised to let bovine tuberculosis severely alone, instead of wasting valuable time and good coin of the realm on the absurdity of eradication.

As to pasteurization, that's bosh, too. Didn't the people of Devon and Cornwall sterilize their milk supply long before Pasteur, and wasn't the incidence of tuberculosis higher among them than the folks of Exeter, and beyond, who drank raw milk? Pasteurizers, take notice!

The article brings up the old argument between Robert Koch and John MacFadyean at the turn of the century, when Koch denounced the very idea that bovine tuberculosis could be transmitted to the human being and Sir John dissented. As to that hackneyed debate, the author votes with the scientist of der Vaterland.

Commenting editorially on the article, the writer points out that the theory of nontransmissibility "has not lacked the support of a minority," and leaves the question reopened for debate—[J. W. Rainey, C.B.E., M.R.C.V.S. *The Relationship of Bovine to Human Tuberculosis Considered in the Light of Experience*. Vet. J. (London), 100, (Nov. 1944): 233-240.]

[All-in-all, the article is unfortunate in that it sharpens the axe of the objectors to farm-animal disease control, of whom there are not a few arguing on individually selfish grounds. The thesis will not greatly affect the attitude of the veterinary service of the United States, for here the word "eradication" is held sacred not so much for the sake of public health (which we leave to the medical profession), but because exterminating disease among farm animals pays big dividends to the state and provides—more abundant food for the people—for example, the surplus of eggs, poultry, and pork in the midst of the war. If countries are willing to live with their animal diseases (note the percentage of bovine tuberculosis in Natal), and want to set aside the human health factor involved, that is their affair. Anyhow, bovine tuberculosis in the United States has been a tremendous success and, moreover, the power and motive behind it was not primarily public health. As much as that was used to cultivate public opinion, it was the economic advantage acknowledged and demonstrated among the farmers themselves that gave eradication its start and carried it through.—Editor.]

THE NEWS

Associated Serum Producers Win Anti-Trust Suit Sales-to-Veterinarians-Only Policy Vindicated

On Feb. 16, 1945, in the federal court for the Northern District of Illinois, the Associated Serum Producers, Inc., fourteen member companies, and a number of company officials were acquitted of alleged conspiracy to restrict sales of anti-hog-cholera serum and hog-cholera virus.

The case had been on trial before a jury in the court of Judge Wm. H. Holly since February 6. The government had alleged a conspiracy, in violation of the Sherman Act, to restrict sales of anti-hog-cholera serum and virus to veterinarians only.

The companies involved in the case and which have for many years maintained individual policies of selling their products to licensed veterinarians or licensed graduate veterinarians only are the following:

Allied Laboratories, Inc., Kansas City, Mo.
Blue Cross-Norden Serum Co., Superior, Neb.

Columbus Serum Co., Columbus, Ohio.

Corn Belt Laboratories, Inc., and Corn Belt Serum Co., East St. Louis, Ill.
Corn States Serum Co., Omaha, Neb.
Fort Dodge Laboratories, Inc., Fort Dodge, Ia.

Grain Belt Supply Co., Omaha, Neb.
Gregory Laboratory, Whitehall, Ill.

Jensen-Salsbury Laboratories, Inc., Kansas City, Mo.

Liberty Laboratories, Inc., Omaha, Neb.
Missouri Valley Serum Co., Kansas City, Kans.

National Laboratories Corporation, Kansas City, Kans.

Norden Laboratories, Lincoln, Neb.

Southwestern Serum Co., Wichita, Kans.

The defendants had contended that there had been no conspiracy, since each company had individually and independently adopted and maintained without change its policy of selling its products to licensed or licensed graduate veterinarians only for a number of years prior to and following the formation of Associated Serum Producers, Inc. The latter is an educational, promotional, and credit organization whose principal activity, since it was formed in 1933, has been to carry on an advertising and educational campaign through the farm press for the betterment of livestock health,

especially improved control of hog cholera. The defendants also contended, and the government admitted, that a company, individually, has the right to restrict sales of its products to any group of customers it may decide upon.

Although the original indictment, returned by a federal grand jury in May, 1942, had alleged an unreasonable restraint in the sale and distribution of all "animal medicines and supplies," trial of the case was narrowed by the government attorneys so as to include only anti-hog-cholera serum and virus.

At the conclusion of the case, the jury was out less than an hour before returning a verdict in favor of the defendants. Officers of Associated Serum Producers, Inc., declared the result was "a complete vindication for the policy of the defendant companies to sell their products only to veterinarians. It is vindication of the principle of scientific use of these products for the preservation of livestock health and better livestock production in this country."

Among the witnesses who testified for the defense were the following representatives of the defendant companies: Mr. Carl Angst, Indianapolis, Ind.; Mr. S. L. Barrett, Ft. Dodge, Iowa; Dr. D. E. Baughman, Ft. Dodge, Iowa; Dr. A. E. Bott, East St. Louis, Ill.; Dr. J. T. Burris, Columbus, Ohio; Dr. E. A. Cahill, Kansas City, Mo.; Dr. A. C. Drach, Omaha, Neb.; Mr. T. R. Furry, Superior, Neb.; Dr. Guy G. Graham, Kansas City, Mo.; Mr. C. S. Greene, White Hall, Ill.; Mr. F. V. Hawkins, Indianapolis, Ind.; Dr. E. B. Hollecker, Kansas City, Kans.; Dr. E. C. Jones, Lincoln, Neb.; Dr. R. C. Julien, Indianapolis, Ind.; Dr. T. W. Munce, Sioux City, Iowa; Dr. Carl J. Norden, Lincoln, Neb.; Mr. Fred J. Rathman, Wichita, Kans.; Dr. M. F. Wallace, Kansas City, Kans.; Mr. Guy H. Williams, Omaha, Neb.; and Mr. Robert Young, Omaha, Neb.

Additional witnesses for the defense were: Dean H. D. Bergman, Iowa State College; Dean R. R. Dykstra, Kansas State College; Dean W. A. Hagan, New York State Veterinary College; Dr. J. S. Koen, Storm Lake, Iowa; Dr. Murray Barker, Thorntown, Ind.; Dr. N. R. Harwood, Manhattan, Kans.; and Dr. A. Kushner, Topeka, Kans.

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X, Section 2.

First Listing

BURKE, H. I.

425 W. 57th St., New York, N. Y.

M.D.C., Chicago Veterinary College, 1910.

Vouchers: R. S. MacKellar and L. A. Merillat.

FERRO, ROBUSTIANO B.

6050 S. 35th St., Omaha 7, Neb.

D.V.S., Kansas City Veterinary College, 1909.

Vouchers: V. V. Golden and F. W. Dennie.

GENDREAU, L. A.

67 Wellington St., S., Sherbrook, Quebec, Can.

B.V.Sc., Ontario Veterinary College, 1931.

Vouchers: R. A. McIntosh and W. E. Swales.

HEWITT, L. L.

1430-15th Ave., Regina, Sask., Can.

D.V.S., Kansas City Veterinary College, 1909.

Vouchers: H. T. Hyslop and T. Childs.

HOYME, K. H.

2402—28th St., Lubbock, Texas.

D.V.M., Texas A. & M. College, 1937.

Vouchers: V. Cox and F. G. Harbaugh.

JACOBY, ALFRED M.

135 Boylston Circle, Shrewsbury, Mass.

D.V.M., Indiana Veterinary College, 1920.

Vouchers: E. M. Aldrich and H. W. Jakeman.

MACNABB, ANDREW L.

126 Colin Ave., Toronto, Ont., Can.

B.V.Sc., Ontario Veterinary College, 1923.

Vouchers: C. D. McGilvray and J. A. Campbell.

NADEAU, J. D.

25 St. Olivier, Quebec, Can.

V.S., Universite de Montreal, 1940.

Vouchers: J. M. Veilleux and H. Chamberland.

SINAL, HARRY J.

604 E. Gun Hill Road, Bronx, N. Y.

D.V.M., Ohio State University, 1936.

Vouchers: S. A. Roth and L. A. Merillat.

SNOOK, GEORGE W.

Quartermaster Market Center, 13 E. Mt Royal Ave., Baltimore 2, Md.

D.V.M., Cornell University, 1938.

Vouchers: W. A. Hagan and D. W. Baker.

YOUNG, F. B.

P. O. Box 6, Waukee, Iowa.

D.V.M., Kansas State College, 1919.

Vouchers: W. H. Riser and A. Lockhart.

Second Listing

Beddow, Ralph N., 3228 Esther St., Honolulu 40, Hawaii.

Bennett, J. E., 2930 Cambie St., Vancouver, B. C., Can.

Bravo, Torcuato M., Casilla 537, Santiago, Chile. Davis, R. H., Post Road, Stamford, Conn.

Diaz, Ricardo E., Casilla 537, Santiago, Chile. Douglass, F. J. Jr., 1615 Metairie Rd., New Orleans 20, La.

Drudge, J. H., Assistant Station Veterinarian, Camp Gordon Johnston, Fla.

Estler, L. E., 855 Passaic Ave., Arlington, N. J. Farber, Sheldon S., 3235 W. Columbia Ave., Philadelphia 21, Pa.

Foss, William D., 518 S. Minnesota St., Prairie du Chien, Wis.

Fuenzalida, Eduardo, Casilla 773, Santiago, Chile.

Kaskin, Samuel T., 108 Essex St., Bangor, Maine.

Klausman, Bernard S., 7713 37th Ave., Jackson Heights, L. I., N. Y.

Legrow, W. R., 321 Dryden Road, Ithaca, N. Y. Mott, Richard E., 385 S. Sierra Madre Ave., Pasadena, Calif.

Sall, Morton L., 416 E. Jefferson St., Sandusky, Ohio.

Thompson, K. H., Milner, B. C., Can.

1945 Graduate Applicants

First Listing

The following are graduates who have recently received their veterinary degrees and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Michigan State College

BRATTAIN, DONALD B., D.V.M.

R. R. No. 2, Liberty, Ind.

Vouchers: C. F. Clark and F. Thorp, Jr.

MILLERICK, THOMAS I., D.V.M.

Box 211, West Salem, Wis.

Vouchers: C. F. Clark and F. Thorp, Jr.

THOMAS, RICHARD M., D.V.M.

9723 Everts Ave., Detroit 24, Mich.

Vouchers: C. F. Clark and F. Thorp, Jr.

Texas A. & M. College

BEERWINKLE, MILTON A., D.V.M.

Route 1, Moody, Texas.

Vouchers: P. W. Burns and R. P. Marsteller.

BOYD, CHARLES L., D.V.M.

Grandview, Texas

Vouchers: P. W. Burns and R. C. Dunn.

BRIDGES, CHARLES H., D.V.M.

Route 3, Jasper, Texas.

Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

BUMSTEAD, WILLIAM A., D.V.M.

1115 Jackson, Amarillo, Texas.

Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

CHASTAIN, JAMIE N., D.V.M.
1615 Fourth St., Brownwood, Texas.
Vouchers: C. O. Morgan and G. T. Edds.

COLVIN, JOHN E., D.V.M.
2219 Kuhio, Honolulu, Hawaii.
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

COSCA, JAMES A., D.V.M.
Rt. No. 2, Box 55, Frayser, Tenn.
Vouchers: R. C. Dunn and F. P. Jaggi, Jr.

DENTON, JAMES H. JR., D.V.M.
310 W. 8th St., Dallas 8, Texas.
Vouchers: P. W. Burns and R. P. Marsteller.

DILLON, GENE DOUGLAS, D.V.M.
Box 56, Marble Falls, Texas.
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

HARKRIDER, AUTRY N., D.V.M.
Box 896, Kilgore, Texas.
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

HENDERSON, EDMOND A., D.V.M.
3727 1/2 Galveston, Texas.
Vouchers: R. D. Turk and R. P. Marsteller.

KELLY, ROBERT J. JR., D.V.M.
General Delivery, Cuero, Texas.
Vouchers: P. W. Burns and R. P. Marsteller.

KELSEY, CHARLES, D.V.M.
General Delivery, Denison, Texas.
Vouchers: R. D. Turk and R. P. Marsteller.

MCCASLAND, FOY V., D.V.M.
Route 3, Goldthwaite, Texas.
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

MCCOY, KID JR., D.V.M.
Route 1, McLean, Texas.
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

MADDUX, EDWARD P. III, D.V.M.
2339 Mistletoe Ave., Fort Worth, Texas.
Vouchers: P. W. Burns and R. P. Marsteller.

MELIUS, THOMAS W. JR.
Box 9022, Metairie 20, La.
Vouchers: R. D. Turk and R. P. Marsteller.

NASH, JAMES E., D.V.M.
c/o Mr. M. L. White, Rt. No. 2, Bonham, Texas.
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

PHILLIPS, B. B., D.V.M.
Ladonia, Texas.
Vouchers: J. H. Milliff and E. D. Dwelle.

PULLIAM, JAMES A., D.V.M.
Trumann, Ark.
Vouchers: R. D. Turk and R. C. Dunn.

REED, JAMES E., D.V.M.
Box 357, Eagle Lake, Texas.
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

RICHEY, CLAUDE H., D.V.M.
1312 Newning Ave., Austin, Texas.
Vouchers: P. W. Burns and R. P. Marsteller.

SIMPSON, AKIN M., D.V.M.
Gail Route, Big Spring, Texas.
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

WAIDHOFER, BERNARD, D.V.M.
Box 275, Lamarque, Texas.
Vouchers: P. W. Burns and R. P. Marsteller.

WILLIAMS, DONALD L., D.V.M.
2818 Frankfort St., El Paso, Texas.
Vouchers: F. P. Jaggi, Jr. and R. P. Marsteller.

Second Listing

Colorado State College*

Anderson, James E., D.V.M., 800 N. Orlando, Los Angeles, Calif.

Ausherman, Lewis T., D.V.M., Miami, N. Mex.

Barnsgrover, Walter J., D.V.M., Hugo, Colo.

Brown, Alfred G., D.V.M., c/o Ted R. Ryan, Rocky Ford, Colo.

Brown, William W. Jr., D.V.M., Box 445, Sterling, Colo.

Burch, Joe E., D.V.M., Box 701, Tulia, Texas.

Carricaburu, John B., D.V.M., Box 123, Los Olivos, Calif.

Chapin, John A., D.V.M., Rt. No. 1, West Plains, Mo.

Clark, R., Moss, D.V.M., 1507 17th St., Santa Monica, Calif.

Consiglieri, A. Eulogio, D.V.M., c/o Peruvian Embassy, Washington, D. C.

Crane, Charles S., D.V.M., 1612 N Lake Ave., Pasadena, Calif.

Emery, Rex W., D.V.M., 2306 Avenue E, Scottsbluff, Neb.

Eyl, Norman W., D.V.M., 624 S. Loomis, Fort Collins, Colo.

Frandsen, Rowen D., D.V.M., R. R. No. 2, Box 221, Loveland, Colo.

Garvik, Kenneth E., D.V.M., Box 684, Sterling, Colo.

Goetz, Elmer F., D.V.M., 317 S. 18th St., Mattoon, Ill.

Grueter, Herman P., D.V.M., Rt. No. 3, Elk City, Okla.

Hause, Robert D., D.V.M., Rt. No. 2, Box 57, Fort Lupton, Colo.

Hoadley, R. E., D.V.M., 507 Sergeant St., Joplin, Mo.

Howarth, Jack A., D.V.M., Eaton, Colo.

Huffaker, Robert H., D.V.M., Rt. No. 1, Alamosa, Colo.

Jessen, Lothard T., D.V.M., Danneborg, Neb.

Johnson, Wendell L., D.V.M., 1112 M St., Modesto, Calif.

Kettle, Benjamin W., D.V.M., Westcliffe, Colo.

Linnell, Marvin R., D.V.M., 905 Patterson St., Glendale, Calif.

LyVere, Donald B., D.V.M., 1675 S. Corona, Denver, Colo.

McChesney, Thomas S., D.V.M., 708 Remington St., Fort Collins, Colo.

McIntyre, Rankin W., D.V.M., 8027 Teasdale Ave., University City, Mo.

Maeda, Chester, D.V.M., 3406 S. Figueroa, Los Angeles, Calif.

Mahnken, Keith W., D.V.M., 105 E. 5th St., Holden, Mo.

Miller, Leslie D., D.V.M., 1347 Garfield St., Denver 6, Colo.

Mitchell, H. B., D.V.M., 1801 S. College, Fort Collins, Colo.

Neurauter, Lloyd J., D.V.M., Box 444, Eaton, Colo.

Orsborn, J. S., Jr., D.V.M., Rt. No. 1, Box 455, Fullerton, Calif.
 Orsborn, Ruth A., D.V.M., 1055 Green St., San Francisco 11, Calif.
 Phillipson, David A., D.V.M., Holbrook, Neb.
 Roberts, Norman C., D.V.M., 5024 Hastings Road, San Diego, Calif.
 Schneider, Warren J., D.V.M., Rt. No. 1, Box 158, Crows Landing, Calif.
 Shoffner, C. Clinton, D.V.M., 406 Pitkin St., Fort Collins, Colo.
 Strohauer, David M., D.V.M., Rt. No. 1, Box B, LaSalle, Colo.
 Von Goertz, Rolfe A., D.V.M., Elmore, Minn.
 Walker, Donald F., D.V.M., R. R. No. 1, Platteville, Colo.

Texas A. & M. College

Myatt, Barney A., D.V.M., 3312 Leeland, Houston, Texas.

COMMENCEMENTS

Agricultural and Mechanical College of Texas

At the commencement exercises of the Agricultural and Mechanical College of Texas, on Feb. 2, 1945, R. P. Marsteller, dean of the School of Veterinary Medicine, presented the following candidates for the degree of Doctor of Veterinary Medicine:

Beerwinkle, M. A.	Kelsey, Charles
Boyd, Charles L.	Linam, Duard D.
Bridges, Charles H.	McCasland, F. V.
Bumstead, W. A.	McCoy, Kid, Jr.
Chastain, J. N.	Maddox, E. P., III
Colvin, John E.	Melius, T. W., Jr.
Coscia, James A.	Myatt, Barney A.
Denton, James H., Jr.	Nash, James Earl
Dillon, Eugene D.	Phillips, B. B.
Folse, Dean S.	Pulliam, James A.
Grumbles, L. C.	Reed, James E.
Harkrider, A. N.	Richey, Claude H.
Henderson, E. A.	Simpson, Akin M.
Ivie, Raymond A.	Waldhofer, Bernard
Kelly, Robert J., Jr.	Williams, D. L.

U. S. GOVERNMENT

Army

Veterinary Officer's School.—As of January, 1945, there were 18 veterinary officers attending the School of Military Government located at Charlottesville, Va.

• • •
Army.—Brig. Gen. R. A. Kelser, director of the Veterinary Division of the Office of the Surgeon General, conducted a seminar in January at the Civic Affairs Training School, Yale University, on "Animal Diseases, Their Importance and Control."

AMONG THE STATES

Alabama

Veterinary Student Enrollment.—The enrollment of students for the winter quarter in the School of Veterinary Medicine, Alabama Polytechnic Institute, as announced in the *Auburn Veterinarian*, is 61 seniors, 44 juniors, 39 sophomores, and 37 freshmen.

• • •

The Auburn Veterinarian.—"Vol. 1, No. 1" of the *Auburn Veterinarian*, official publication of the A.P.I. Student Chapter of the American Veterinary Medical Association, dated "Winter 1945," is the latest addition to the excellent journals now published by the students of American veterinary colleges to maintain college spirit among the alumni, to cultivate the desire and ability to write, and, inferentially, to register the sequence of college events, not to mention the publication of technical material of current interest. Faced with the obligation of attaining literary excellence in the interest of *alma mater*, these student periodicals will have a wholesome effect on the advancement of the profession's public relations, and, as they reflect the soul of the college itself to a considerable degree, the responsibility is not trivial. The issue (*loc. cit.*) shows that fulfillment of the task assumed is the editorial policy.—L.A.M.

California

War Conference.—More than 150 veterinarians met in conference at San Luis Obispo, January 9-11, to continue their discussions on wartime problems, including postwar employment and education. The sessions were held in the auditorium of California Polytechnic School, E. C. Baxter, president of the state association, presiding. Among the guest speakers were B. T. Simms, Auburn, Ala., President-Elect of the AVMA; N. J. Miller, practitioner and member of the Colorado State Legislature, Eaton, Colo.; H. C. Smith, Allied Laboratories, Sioux City, Ia.; and Julian McPhee, director of vocational education at California Polytechnic School. The technical program catalogues the following curriculum:

B. T. Simms: "Diseases of Calves."

C. M. Baxter: "Skin Diseases of Dogs."

H. C. Smith: "Leptospirosis of Dogs," "Anaplasmosis," and "Sulfonamides in Pneumonia and Enteritis of Swine."

N. J. Miller: "Impactions and Colics" in Horses," "Feedlot Diseases of Cattle," and "Feedlot Diseases of Sheep."

J. D. Cozzens: "The Green Method of Vaccination for Canine Distemper."

A. C. Rosenberger: "Some California Sheep Disease Problems."

J. Hird: "Calfhood Vaccination for Brucellosis."

C. M. Haring and J. Traum: "Further Observations on the Effect of Strain 19 Vaccine."

J. R. Beach: "Vaccination for Avian Pneumocephalitis."

Julian A. McPhee: "Veterans Education."

s/J. L. TYLER, Resident Secretary.

• • •

Duckworth Honored.—Under the headline, "Duckworth Honored," *The California Wool Grower* announces:

Dr. C. U. Duckworth, assistant director, State Department of Agriculture, Sacramento, California, has been elected president of the United States Sanitary Association at the organization's annual meeting in Chicago.

• • •

Tyler Mourns Distinguished Classmate.—Dr. Abraham Lincoln Eisenhower (C.V.C., '91), of Pasadena, classmate of Dr. John L. Tyler, resident secretary of the AVMA, died Dec. 13, 1944.



Abraham Lincoln Eisenhower, M.D.C.
(C.V.C., '91) 1865-1944.

and Iowa before retiring and moving to Pasadena in 1919. From Army Headquarters in France, his widow received the following message: "Please accept my deepest sympathy in the loss of Uncle Abe.—Dwight D. Eisenhower."

While not claiming the Reverend as a member of the veterinary profession at the time of his death, it is good to learn from a classmate and neighbor that his college training and experience in practice among Kansas farmers were the foundations for a useful life in the high realm of theology.

• • •

Personal.—Colonel Robert J. Foster, U. S. Army retired, of San Francisco, was elected an honorary member of the California State Veterinary Medical Association at its recent winter meeting in San Luis Obispo.

• • •

Personal.—Robert G. Helfer, instructor at Washington State College since 1942, has accepted a research post at the state university in Davis, effective Feb. 5, 1945. Dr. Helfer took his Ph.D. in genetics at California Institute of Technology, Pasadena, and served there as research assistant. He taught also at Amarillo (Tex.) City College for two years.—*From a News Clipping.*

Illinois

State Medicine Discussed.—Executive Secretary John W. Neal, Committee on Medical Service and Public Relation, Illinois State Medical Society, spoke on "Socialized Medicine in the United States" at the February meeting of the Chicago Veterinary Medical Association.

• • •

Lyman Peck Now Feed Consultant

Mr. Lyman Peck, for the past seven years director of nutrition for McMillen Feed Mills, Fort Wayne, Ind., resigned that position December 1, 1944, and has announced the opening of an office in Chicago as a feed consultant. Mr. Peck is well known as a student of livestock and poultry nutrition and management and has been a frequent contributor on these subjects to various meeting programs for many years. In the veterinary profession, especially in the Middlewest, he is perhaps best known for his organization of three "Nutrition Conferences for Veterinarians," which were held in Decatur, Ind., in recent years and widely attended by veterinarians from several midwestern states.

Prior to his association with the milling company, Mr. Peck was, for eight years, head of the animal husbandry department of Merck & Co., Rahway, N. J. His early experience with livestock was as a breeder of Shorthorn cattle, Poland China hogs, and poultry in Nebraska.

He has a son and daughter-in-law, Dr. Edward P. Peck, and Dr. Elizabeth N. Peck, both of whom are veterinarians (graduates of OSU, class of 1939) practicing in Decatur, Ind.

at the home of Rev. E. J. Broyles in Upland, at the age of 79. He was the last surviving uncle of Gen. Dwight D. Eisenhower, commander-in-chief of the allied forces in the European theater. The Doctor was actually Rev. A. L. Eisenhower, having been ordained as a minister in the Brethren in Christ Church after practicing veterinary medicine for a time in Kansas, adopted state of the Eisenhowers. He filled important pastorates in Oklahoma, Ohio,

Orsborn, J. S., Jr., D.V.M., Rt. No. 1, Box 455, Fullerton, Calif.
 Orsborn, Ruth A., D.V.M., 1055 Green St., San Francisco 11, Calif.
 Phillipson, David A., D.V.M., Holbrook, Neb.
 Roberts, Norman C., D.V.M., 5024 Hastings Road, San Diego, Calif.
 Schneider, Warren J., D.V.M., Rt. No. 1, Box 158, Crows Landing, Calif.
 Shoffner, C. Clinton, D.V.M., 406 Pitkin St., Fort Collins, Colo.
 Strohauer, David M., D.V.M., Rt. No. 1, Box B, LaSalle, Colo.
 Von Goertz, Rolfe A., D.V.M., Elmore, Minn.
 Walker, Donald F., D.V.M., R. R. No. 1, Platteville, Colo.

Texas A. & M. College

Myatt, Barney A., D.V.M., 3312 Leeland, Houston, Texas.

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Chastain, J. N.	Maddox, E. P., III
Colvin, John E.	Melius, T. W., Jr.
Coscia, James A.	Myatt, Barney A.
Denton, James H., Jr.	Nash, James Earl
Dillon, Eugene D.	Phillips, B. B.
Folse, Dean S.	Pulliam, James A.
Grumbles, L. C.	Reed, James E.
Harkrider, A. N.	Richey, Claude H.
Henderson, E. A.	Simpson, Akin M.
Ivie, Raymond A.	Waidhofer, Bernard
Kelly, Robert J., Jr.	Williams, D. L.

U. S. GOVERNMENT

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C. M. Baxter: "Skin Diseases of Dogs."

H. C. Smith: "Leptospirosis of Dogs," "Anaplasmosis," and "Sulfonamides in Pneumonia and Enteritis of Swine."

N. J. Miller: "Impactions and Colics in Horses," "Feedlot Diseases of Cattle," and "Feedlot Diseases of Sheep."

J. D. Cozzens: "The Green Method of Vaccination for Canine Distemper."

A. C. Rosenberger: "Some California Sheep Disease Problems."

J. Hird: "Calfhood Vaccination for Brucellosis."

C. M. Haring and J. Traum: "Further Observations on the Effect of Strain 19 Vaccine."

J. R. Beach: "Vaccination for Avian Pneumocephalitis."

Julian A. McPhee: "Veterans Education."

s/J. L. TYLER, Resident Secretary.

• • •

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• • •

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Abraham Lincoln Eisenhower, M.D.C.
(C.V.C., '91) 1865-1944.

and Iowa before retiring and moving to Pasadena in 1919. From Army Headquarters in France, his widow received the following message: "Please accept my deepest sympathy in the loss of Uncle Abe.—Dwight D. Eisenhower."

While not claiming the Reverend as a member of the veterinary profession at the time of his death, it is good to learn from a classmate and neighbor that his college training and experience in practice among Kansas farmers were the foundations for a useful life in the high realm of theology.

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Personal.—Colonel Robert J. Foster, U. S. Army retired, of San Francisco, was elected an honorary member of the California State Veterinary Medical Association at its recent winter meeting in San Luis Obispo.

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Personal.—Robert G. Helfer, instructor at Washington State College since 1942, has accepted a research post at the state university in Davis, effective Feb. 5, 1945. Dr. Helfer took his Ph.D. in genetics at California Institute of Technology, Pasadena, and served there as research assistant. He taught also at Amarillo (Tex.) City College for two years.—From a News Clipping.

Illinois

State Medicine Discussed.—Executive Secretary John W. Neal, Committee on Medical Service and Public Relation, Illinois State Medical Society, spoke on "Socialized Medicine in the United States" at the February meeting of the Chicago Veterinary Medical Association.

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Lyman Peck Now Feed Consultant

Mr. Lyman Peck, for the past seven years director of nutrition for McMillen Feed Mills, Fort Wayne, Ind., resigned that position December 1, 1944, and has announced the opening of an office in Chicago as a feed consultant. Mr. Peck is well known as a student of livestock and poultry nutrition and management and has been a frequent contributor on these subjects to various meeting programs for many years. In the veterinary profession, especially in the Middlewest, he is perhaps best known for his organization of three "Nutrition Conferences for Veterinarians," which were held in Decatur, Ind., in recent years and widely attended by veterinarians from several midwestern states.

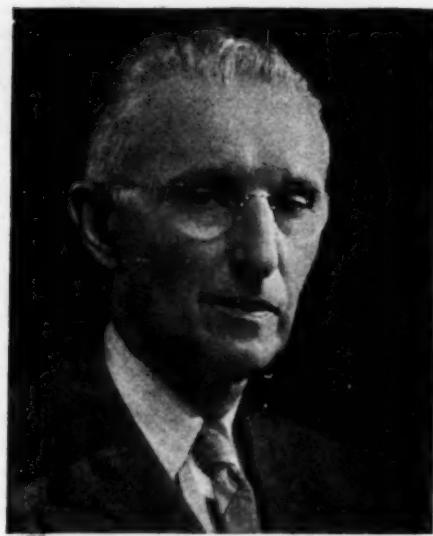
Prior to his association with the milling company, Mr. Peck was, for eight years, head of the animal husbandry department of Merck & Co., Rahway, N. J. His early experience with livestock was as a breeder of Shorthorn cattle, Poland China hogs, and poultry in Nebraska.

He has a son and daughter-in-law, Dr. Edward P. Peck, and Dr. Elizabeth N. Peck, both of whom are veterinarians (graduates of OSU, class of 1939) practicing in Decatur, Ind.

at the home of Rev. E. J. Broyles in Upland, at the age of 79. He was the last surviving uncle of Gen. Dwight D. Eisenhower, commander-in-chief of the allied forces in the European theater. The Doctor was actually Rev. A. L. Eisenhower, having been ordained as a minister in the Brethren in Christ Church after practicing veterinary medicine for a time in Kansas, adopted state of the Eisenhowers. He filled important pastorates in Oklahoma, Ohio,

Mr. Peck's office as a feed consultant is at 53 West Jackson Blvd., Chicago 4, Ill.

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Dr. J. V. Lacroix, Evanston, was elected president of the Illinois State Veterinary Medical Association at its sixty-third annual meeting at Springfield, Jan. 18-19, 1945.

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Livability of a Sow.—Up in Whiteside County, a 350-lb. sow on the farm of Clarence Wagenecht disappeared at threshing time last summer. Ten weeks later, after having hollowed out a room for herself but surviving without water and suffering a loss of but 30 lb. in weight, she was apprehended, thrived, and went to market at 450 lb. The event, reported in *Farm Journal and Farmers' Wife* for February, 1945, caught the eye of Capt. Thomas C. Hinkle, V.C., A.U.S., who writes: "I can't believe it, can you?"

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Dog World Anniversary.—Dog World, Chicago, popular dog magazine, published its thirtieth anniversary issue in January. Established in 1916, it published its 349th monthly issue Jan. 1, 1945. Capt. Will Judy has been its editor since 1923.

Indiana

State Association.—The officers elected at the sixty-first annual meeting of the Indiana Veterinary Medical Association on Jan. 10, 1945, for the ensuing year are as follows:

T. L. Steenerson, Wilkinson, *president*; O. C. Shockley, New Ross, *vice-president*; H. A. Lidikay, Darlington, *secretary-treasurer*. Board of directors: Geo. L. Clark, Columbia City, *chairman*; Glen Ebright, Hammond; C. C. Dobson, New Augusta, *vice-chairman*; G. M.

Wagaman, Kokomo; Frank H. Brown, Indianapolis; Roy W. Elrod, North Vernon.

Glen Ebright was elected the delegate to the AVMA House of Representatives and C. Harvey Smith, Crown Point, alternate.

Frank R. Booth, Elkhart, replaces Walter K. York as resident secretary of the AVMA.

The Women's Auxiliary of the IVMA elected the following officers: Mrs. O. B. Curry, Morristown, *president*; Mrs. L. A. Clark, Bedford, *vice-president*; Mrs. F. A. Hall, Garrett, *secretary*; Mrs. H. W. Dempsey, Huntington, *treasurer*.

s/H. A. LIDIKAY, *Secretary*.

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Gillie Speaks Out for the Fairs.—Pointing out the great state fairs and livestock exhibitions as builders of morale among farmers, Congressman George W. Gillie made a motion before the House of Representatives that the Army and Navy turn back to the farmers the grounds and buildings of fairs and stock expositions which they now occupy as mere warehouses. "If we go another year of all-out food production," said the Congressman, "we must give the farmers a chance to hold their morale-building fairs and stock shows."

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Purdue Professor Honored.—An oil painting of Prof. Frank G. King, head of the animal husbandry department of Purdue, was unveiled in the gallery of distinguished stockmen of the Saddle and Sirloin Club, in Chicago. Sponsor: American Shorthorn Club, whose president, Will Johnson, rendered the eulogy.

Iowa

East Central Iowa Veterinary Medical Society.—Fifty-one veterinarians entertained 26 dairymen at dinners at Hotel Jefferson, Iowa City, Feb. 8. Seventeen counties were represented.

Moving pictures, in sound and color, from the library of the University of Iowa, were shown of the dairy industry.

Dr. H. C. Smith. Sioux City pathologist, talked on the sulfonamides. Many questions were asked Doctor Smith by both veterinarians and dairymen.

President Russell J. Beamer. Iowa City, spoke on the "Treatment of Mastitis," and conducted a forum which inspired a regular "bull session", in which dairymen and veterinarians joined heartily.

Secretary-Treasurer I. P. Irwin. Iowa City, spoke on "Artificial Insemination." Again, the question period was lively.

The program chairman for the meeting was Dr. Fred J. Crow of Iowa City. President Beamer announced the next meeting would be held March 8 at Tipton, and Dr. C. H. Banks, of Tipton, as program chairman for that meeting.

s/I. P. IRWIN, *Secretary-Treasurer*.

Rabies in Farm Animals.—The *Infectious Disease Bulletin*, of the Eastern Iowa association for January reported four outbreaks of rabies in horses and cattle on that many farms in that territory, and 23 outbreaks of hog cholera.

Kansas

New Veterinary Curriculum for Kansas State College.—Announcement of a new curriculum for the School of Veterinary Medicine has been made, effective with the 1945 fall semester. It contains the following major changes:

Inclusion of 23 semester hours of "comprehensives," 15 in the preveterinary year and 8 in the freshman veterinary year. These comprehensives are for the purpose of assuring a sound training in citizenship and a broader grasp of the four great areas of knowledge: the physical sciences, biological sciences, social sciences, the humanities, and are part of a college-wide program adopted after more than a year of study by faculty committees and recently announced by President M. S. Eisenhower.

Parasitology requirements are increased from 3 hours to 6; required courses in pharmacodynamics and small animal surgery are added. Anatomy is to be taught only one year with total of 12 semester hours, but 1 hour of topographic anatomy is added to the junior year. Two former courses in bacteriology of 8 semester hours are changed to three courses in microbiology, pathogenic bacteriology and virology, and veterinary immunology with a total of 10 semester hours.

The meat hygiene course of 3 hours is changed to meat hygiene and public health, 5 hours. A junior-senior conference for each semester of those years has been added for review of diagnostic practices with faculty members. A course in gynecology, 1 semester hour, has been included in the senior year.

The total number of semester hours required for graduation has been increased from 137 for men to 149 and, for women, from 135 to 147.

s/R. R. DYKSTRA

Kentucky

Defeats Objectionable Legislation.—President Rose and Secretary Kearns, of the state association, point out in a circular letter that a law introduced in the state legislature prohibiting veterinarians from dispensing drugs, even from the kitbag, narrowly escaped passage last year, and they draw attention to the defeat of the measure through the Association's energetic opposition. Livestock owners, county agents, and farm bureau officials were urged to register their protest, and through their combined effort an unfortunate law, backed by the Kentucky Pharmaceutical Association, was defeated. The circular also stresses the fact that

less than 50 per cent of the state's veterinarians participate in organized veterinary medicine, yet the "ins" had to rescue the "outs" by working day and night telephoning and telegraphing the lawmakers to pause before putting such a ridiculous measure in the statutes.

State Association Meeting.

The Kentucky Veterinary Medical Association met in conference Feb. 1-2, 1945, at the University of Kentucky, Lexington, F. E. Hull and W. W. Dimock presiding.

The conference program included the following:

W. W. Dimock, University of Kentucky: "Trends and Progress in Veterinary Medicine" and "Brain Disturbance in Horses." Dr. Dimock also led a round-table discussion.

E. J. Kinney, University of Kentucky: "Soils, Crops, and Livestock."

Dewey Steele, University of Kentucky: "Some Examples of Lethal Genes."

C. S. Bryan, Michigan State College: "Where Are We on Mastitis?" and "Mastitis." Discussion on latter subject led by A. H. Craige, Jr.

E. R. Frank, Kansas State College, Manhattan: "Large Animal Surgery." (Illustrated).

A. H. Craige, Jr., Pitman-Moore Co., Indianapolis, Ind.: "The Value of Blood Examination in Diagnosing Animal Diseases."

L. M. Roach, Fayette County Health Department: "Public Health and the Veterinarian."

The registration was small due to travel conditions but the program was excellent and was enthusiastically received.

A motion was passed to discontinue meetings for the duration and the present officers to retain their offices until the next meeting.

s/F. M. KEARNS, Secretary-Treasurer.

Louisiana

State Association.—The fourteenth annual short course for the Louisiana Veterinary Medical Association, conducted by the Louisiana State University and A. & M. College, was held Feb. 8-9, 1945, on the University Campus, Baton Rouge, La. The course included the following technical program:

James Farquharson, Ft. Collins, Colo., president of AVMA: "Surgical Procedures" and "Organization of the AVMA."

Staff, Veterinary Science and Dairy Research, Louisiana State University, A. & M. College: "Case Reports." (Illustrated.)

C. H. Staples, Louisiana State University: "Dairy Herd Management."

C. W. Bower, Topeka, Kan.: "Small Animal Practice."

R. S. Paige, Alexandria: "Dermatitis in Brahman Cattle."

H. Schmidt, Texas Agricultural Experiment Station, College Station: "Vitamin A Deficiencies in Ruminants."

W. J. Gray, Thibodeaux, and **J. E. LeBlanc**, Paincourtville: "A Report on the 1944 Equine Encephalomyelitis Outbreak."

John H. O'Neil, State Department of Public Health, New Orleans, La.: "Milk Sanitation."

At the close of the formal program, A. A. Miller gave a demonstration of meat inspection; W. L. Stroup demonstrated restraint; and James Farquharson, C. W. Bower, and Burg Waddill presented a demonstration of small-animal surgery.

s/A. H. GROTH.

Maine

State Association.—The Maine Veterinary Medical Association, at its annual meeting, held at the Worster House in Hallowell, Jan. 17, 1945, reelected the same officers for a second year; they were: **R. E. Whitcomb**, *president*; **E. C. Moore**, *vice-president*; **S. D. Merrill**, *secretary-treasurer*. The executive committee includes: **E. G. Sadler**, **H. N. Eames**, and **L. B. Denton**.

A technical program was presented following the business session:

Harry B. Keener, University of New Hampshire: "Cobalt Deficiency in Dairy Cattle in New Hampshire."

J. F. Witter, Orono, and **P. R. Baird**, Waterville, reported on the meetings held by the United States Live Stock Sanitary Association in Chicago.

C. M. Merrill, South Paris: "Chronic Brucellosis."

The program concluded with the showing of four sound films: "Vesicular Diseases in Animals"; "Body Defenses Against Disease"; "The Function of the Kidneys"; "The Alimentary Tract and Digestion."

s/S. D. MERRILL, *Secretary*.

Massachusetts

State Association.—The annual meeting of the Massachusetts Veterinary Medical Association was held in Boston, Jan. 30, 1945, at the Vendome Hotel. The Association was honored in having President James Farquharson of the AVMA as speaker for its annual meeting. During the afternoon, Dr. Farquharson showed films on surgical subjects. Following the banquet, he spoke on the activities of the AVMA in connection with various problems facing veterinary medicine. Later in the evening, he showed more of his films. Dr. Farquharson's address and likewise the films were enjoyed by over 150 veterinarians. An invitation for this meeting had been extended to veterinarians throughout New England and all of the states were represented. In addition, 35 members of the Army Veterinary Corps were in attendance. Colonel Harry E. Van Tuyl, Station Veterinarian, of Fort Devens, and Colonel J. D. Derrick, of the First Service Command, were among the guests. The Association was also honored in having one

of its own members, Lieut. Colonel Shannon, present for the first time in several years. Colonel Shannon has been on overseas duty in Africa, Italy, and other places. He returned a short time ago to the United States.

During the business session, officers for the year 1945 were elected as follows: **F. M. Austin**, *president*; **E. M. Aldrich**, *1st vice-president*; **A. H. Russell**, *2nd vice-president*; **H. W. Jakeman**, *secretary-treasurer*. The association delegates to the House of Representatives of the AVMA—**L. A. Paquin** and **W. H. Hodge** as alternates.

s/H. W. JAKEMAN, *Secretary*.

New York

New York City Veterinary Medical Association.—The Association held its regular meeting in the Hotel New Yorker, Jan. 31, 1945.

James Farquharson, professor of Surgery and Clinics, Colorado State College, Fort Collins, and president of AVMA, was the guest speaker; his subject was "Small Animal Surgical Technique," illustrated with motion pictures.

The following guests were introduced: Dr. Otto Stader, Dr. T. Sheldon, Dr. Henry Sussman, Dr. Hoag, Dr. Melvin Sacks, Dr. Leroy Atkinson, Dr. C. J. Chehayl, Dr. J. Mackery, Dr. Muskovin, Dr. Terry, Dr. Tierney, Dr. Willars, and Major Olvey.

Dr. Zepp put on a drive for the National Infantile Paralysis Fund.

New members introduced were: **C. J. Chehayl**, Plainfield, N. J.; **Nathan Miner**, Brooklyn, N. Y.; **Charles R. Robinson**, Madison, N. J.; and **Henry Ross**, Brooklyn, N. Y.

Oklahoma

State Association.—The Oklahoma Veterinary Medical Association held its thirtieth annual meeting at the Skirvin Hotel, Oklahoma City, Jan. 8, 1945. Due to insufficient material and speaking talent to fill a two-day program, decision was made to change it to a one-day meeting. About seventy veterinarians were present, which is no mean showing with gasoline and tires rationed and general travel restricted.

After a noonday luncheon, the following program was presented:

Karl S. Harmon, Stillwater: "Equine Case Reports."

R. D. Turk, College Station: "Trichostrongylosis in Sheep and Goats."

W. F. Irwin, Tulsa: "Report on Postwar Planning."

Pathological Division, BAI, USDA Film: "Vesicular Diseases of Animals."

Officers elected for the ensuing year were **I. D. Worsham**, *president*; **E. E. Harnden**, *vice-president*; **C. H. Fauks**, *secretary-treasurer*.

s/C. H. FAUKS, *Secretary*.

Rhode Island

Praises the Veterinary Corps.—An illustrated article in the *Providence (R. I.) Sunday Journal*, thoughtfully clipped by Dr. Chas. H. Cunningham, Poultry Husbandry Department, Rhode Island State College, describes the Army's improved system of protecting and caring for its men. From the part devoted to the Veterinary Corps, we quote:

The Veterinary Corps, a branch of the medical department, is manned by officers, graduates in veterinary medicine. The corps is responsible for the health of animals in the army, including horses, mules, and 11,000 war dogs, and is concerned also with the supplies of food of animal origin, which involves an immense job of inspection and analyses.

In combat, army animals receive the same swift treatment as soldiers. Veterinary aid stations receive and record animal casualties, give emergency treatment to disabled animals, return them to duty or prepare them for evacuation. Animals which cannot be salvaged are destroyed.

To insure the quality of all meat and dairy supplies for the army, for the navy and marine corps, periodic inspections are made of all plants furnishing meats, meat food and dairy products.

During 1943 Veterinary Corps officers inspected nearly six billion pounds of meat and dairy products. More than 300 million pounds of it (or more than one pound out of 20) were rejected because of poor quality.

Army veterinarians also are proud of achievements in the field of health conservation resulting in reduction of disease among animals.

Sleeping sickness (encephalitis) which is transmissible to human beings, has not been present in army animals since 1939 when a serum was developed by the Veterinary Corps.

Utah

Intermountain Association.—The seventeenth annual meeting of the Intermountain Livestock Sanitary Association was held in Salt Lake City, Jan. 12-13, 1945. Phil F. Graves, Idaho Falls, Idaho, was elected *president* and M. L. Miner, Provo, *secretary-treasurer*, to succeed himself as acting treasurer.

The following program was carried out under the presidency of F. H. Melvin:

H. E. Kingman, Wyoming Hereford Ranch, Cheyenne, Wyo.: "Evaluation of Semen Specimens."

Glenn C. Holm, University of Idaho, Moscow: "Detection and Control of Chronic Mastitis" and "Swine Erysipelas, Vaccination Program."

B. T. Simms, director, Animal Disease Research Laboratory, Auburn, Ala.: "Diseases of Calves."

H. C. Smith, Research Department, Allied Laboratories, Sioux City, Iowa: "Infections and Noninfectious Enteritis of Swine" and "Value of Sulfonamides in Pneumonia and Enteritis."

Major N. O. Wilson, Station Veterinarian, Salt Lake City: "Some Aspects of Army Veterinary Inspection Service."

Hadleigh Marsh, Montana State College, Bozeman, Mont.: "Parasites in Range Sheep with Comments on the Use of Phenothiazine."

L. R. Vawter, Department of Veterinary Science, University of Nevada, Reno: "Bacillary Hemoglobinuria in Cattle."

Lieut. Col. F. B. Queen, M.C., U. S. Army, Bushnell General Hospital, Brigham City: "Tumors of Animals."

s/F. H. MELVIN, President.

Virginia

State Association.—The winter meeting of the Association was held at the Roanoke Hotel, Roanoke, Jan. 30 to Feb. 1, 1945, with 65 veterinarians in attendance. The following program was presented:

B. T. Simms, director, U. S. Regional Laboratory, Auburn, Ala., and president-elect of the AVMA: "Control of Gastrointestinal Parasites of Domestic Animals" and "Bovine Coccidiosis."

J. A. Sluss, federal inspector, Salem: "Display of Museum Specimens."

L. A. Dykstra, Cutter Laboratories: "Hog Cholera Vaccines." Colored movies were shown.

I. A. Merchant, head, Department of Veterinary Hygiene, Iowa State College: "Veterinary Medicine and Public Health." The discussion was led by I. C. Riggan, state health commissioner, Richmond. Dr. Merchant also spoke on "Mastitis Diagnosis and Control."

F. R. Beaudette, poultry pathologist, New Jersey Agricultural Experiment Station, New Brunswick: "Avian Pneumoencephalitis and Like Diseases."

P. J. Brandly, poultry pathologist, U. S. BAI: "Some Aspects of Poultry Inspection." Dr. Brandly discussed particularly the condemnation of diseased carcasses.

H. K. Royer, practitioner, Roanoke: "Allergy and Its Importance in Veterinary Practice."

R. P. Reese, New Jersey Agricultural Experiment Station, New Brunswick: "Hormonal Therapy in Relation to Veterinary Medicine."

Washington

Veterinary Corps Activities.—Among the releases of the Publications Branch, Bureau of Public Relations, War Department, are copy and pictures describing the scope of the veterinary service rendered at McCaw General Hospital at Walla Walla and surrounding Army Air Bases. The service includes meat inspection

at the local abattoir, inspection of eggs, butter, chickens, and turkeys, supervision and regular inspection of stored foods, guarding the health of a small flock of sheep, and the pur-



Fig. 1—Captain Leonard W. Hibbs, V.C., A.U.S., and Sgt. Maurice Connelly, veterinary technician, posing for the camera in the cold storage plant of the post.

chase, feeding, and care of the laboratory rabbits, guinea pigs, and mice used by the bacteriologists of the General Hospital. The service is in charge of Captain Leonard W. Hibbs, one-time member of the Norden Laboratories' staff at Davenport, Ia., whose specialized training was furnished at the Army Meat and Dairy Hygiene School in Chicago. The orderly selection of veterinary corps personnel is shown by the background of the four enlisted men in the Captain's detachment: Sgt. Maurice Connelly was a Philadelphia horseman; Sgt. Henry A. Debels had a meat business in Seattle; Pfc. Clarence Crystal raised beef cattle in Montana; and Pfc. Bill J. Klubnikin is the son of a Los Angeles meat packer.

Wisconsin

State Association.—The Wisconsin Veterinary Medical Association met at the Park Hotel, Madison, Jan. 11-12, 1945, with an excellent attendance. The election of officers resulted as follows: George J. Theiler, Tomahawk, *president*; Clarence Otteson, Edgerton, *vice-president*; and Ralph Hipenbecker, Fennimore, *trustee*.

The feature of the banquet session was "Visual Education—the Stader Splint," by Dr. Otto Stader, of Ardmore, Pa. A number of surgeons from the several clinics in Madison were invited to attend the banquet session and hear Dr. Stader. A field panel on mastitis was also presented and received popular approval. Others from outside the state who contributed to the program were:

A. R. Menary, Iowa: "Diseases of Horses."

Raymond Hofferd, Iowa: "Diseases of Swine."

Louis Harris, Norden Laboratories, Lincoln, Neb.: "Aids to Diagnosis."

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North Central Association.—The North Central Veterinary Medical Association convened Dec. 8, 1944, at the Eau Claire Hotel, Eau Claire. A clinic was held at the hospital of G. B. Wriggleworth, followed by a banquet at the hotel, with 100 veterinarians attending.

Known as the "R. J. Coffeen meeting," the program honored Dr. Coffeen, of Stillwater, Minn., who, in spite of his approaching eightieth birthday, is still actively engaged in veterinary practice.

John W. Pritchard, farmer, and member of the legislature, was an honored guest. He will introduce legislation in the present session in connection with the control of brucellosis.

S/JAMES S. HEALY, *Resident Secretary.*

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Outbreak of Listerellosis.—An outbreak of this newly recognized fatal infection of the central nervous system, involving 40 out of a herd of 160 Hereford heifers, was reported in January by the State Department of Agriculture. The outbreak was reported by W. L. Lee, practitioner of Loyal, and the diagnosis was confirmed by C. E. Blye of the veterinary control laboratory at Madison. The sick did not respond to sulfa drugs. The source of the infection was not determined.

Foreign

French Africa

Wartime Medical-Veterinary Periodical Discontinued.—*Revue des Sciences Médicales, Pharmaceutiques et Vétérinaires* of Free French Africa was discontinued with the October, 1943, issue, following the liberation of African territory from enemy domination. Although the issue arrived more than a year late, the valendictory of the editorial committee is no less historic. The *Revue* was conceived, founded, and published under conditions which will forever make its two tomes famous in veterinary-medical-pharmaceutical history. It carried on when that part of Africa represented the sole remnant of France, the birthplace of veterinary science. From the farewell of *La Comité de Redaction* we translate: "This revue, bearing witness to the spirit of these sciences, was founded at a time when A.E.F. and Cameroun were the sole remaining units of colonial France. The territories which recognized General de Gaulle as their chief, having repulsed all foreign domination, continued to assure the native populations of the blessing of medicine, the better to enable physicians, pharmacists, and veterinarians to face the necessities of each hour. The *Revue* has brought proof to the whole world of the continuity of these studies and

our will to extend them toward research, toward welfare, and toward the relief of mankind. Now that all French territory is united to the same effort, the time has arrived to replace this emergency organ with one of greater importance. . . ."

Great Britain

Udder Infusions by Farmers.—Smith (H. William) protests in the *Veterinary Record* against advertisement in the farm press, advocating the treatment of chronic mastitis by means of udder infusions. While in the normal course of events, stockmen should be free to treat their own animals as they have been taught to do in the case of inflating the udder for milk fever, for example, chronic bovine mastitis is a public health problem, calling for a protest against such a practice. Unless the infusion is carried out properly, there is considerable danger of infecting udders with tuberculosis. It would seem, therefore, that only competent persons should be permitted to infuse udders, the correspondent points out.

The Royal Army Veterinary Corps.*—Reduced to a shadow of its former self and kept quite latent in the background of the changing picture of military organization, the R.A.V.C., which wrote many a fine page into the annals of veterinary medicine during the last war, has not only been redeemed but has been charged with new responsibilities never before allocated to a similar military service. In 1941, the Corps took over all the duties of the remount service (procurements, care, management of animals) and proceeded to participate in the far-flung operations of British troops (Eritrea, Palestine, North Africa, India, and other theaters). Its organization, where needed, includes mobile sections, evacuation units, base hospitals, laboratories, and supply depots, differing mainly from the last war in the possessing of greater mobility than the fixed installations of General Moore.

The expanded duties comprise the inspection of meats, the care and training of war dogs, the raising of rabbits, the handling of camels and goats, and aiding civilian populations with their livestock problems—all superadded to the one-time limited duties of a veterinary corps.

Earned credit for rebuilding the R.A.V.C. and its affluence is accorded to Brigadier Murray and his staff. It's the veterinary corps of the younger generation of British veterinary surgeons. The veterans of World War I are not commissioned in the new order. Only young men are deemed capable of standing the ordeal of desert and jungle, but their work remains the same—the salvage of much needed animals difficult to replace. The collection and rehabili-

tation of hundreds of animals abandoned in North Africa by Rommel's defeated legions may be singled out as an example of what a veterinary corps in the field does for the armed forces and the folks at home.

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South American Meat Blamed for Foot-and-Mouth Disease.—The *Farmer & Stock Breeder* (London), issue of Nov. 21, 1944, reports that the House of Commons has openly blamed the importation of meats from Argentina and Uruguay for outbreaks of foot-and-mouth disease and has suggested that these countries be asked to stop storing meat from diseased animals at freezing plants and shipping it to this country (England).

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Salt Recovered from Argentine Hides.—Brig. Gen. Clifton Brown asked the Minister of Agriculture (Hudson) whether he is aware that merchants are selling salt for agricultural purposes which has been used for preserving imported hides on board ships from the Argentine and whether, in view of the fact that many of these hides are infected with foot-and-mouth disease, he will take steps to have this salt thrown away at the ports and not used on the land. Whereupon Mr. Hudson replied that there is no reason to suspect that outbreaks of foot-and-mouth disease in this country (Great Britain) have been caused by the use, for agricultural purposes, of salt which was previously used on board ships for preserving imported hides. "I do not think," the Minister added, "there is any necessity to take action along the lines suggested."—*Pickup from the Veterinary Record*, Dec. 16, 1944.

Holland

Veterinary Corps Saves Blooded Dutch Herds.—The Allied Supreme Military Mission in Holland engaged in a large way in the saving of prize cattle herds, of the rich farm lands, flooded by the bombing of dikes and dams. While many famous herds were lost, others were saved by evacuating them on barges. Small farm animals (pigs, sheep, chickens) perished in the flooded waters. Official reports give credit to Major Harry Gorman, V.C., A.U.S., for ably directing these operations.

* * *

Appalling Mortality Anticipated.—The mounting incidence of tuberculosis due to the low average caloric intake of the Dutch population is stressed by the Netherlands Information Bureau. The minimum requirement of an idle person engaged in no activity whatever is 1,200 calories per day. That of today's inhabitants of the larger cities of Holland is less than 900 calories. Butter was completely exhausted in November, 1944. Unless the situation is improved, disaster of gigantic proportions is predicted. Thus, a country famous for its livestock faces slow starvation.

*Condensed from the *Veterinary Record*.

India

Livestock Population.—As agriculture is the country's vital industry, the livestock population plays a still more important part. India leads the world in cattle and goats, hides and skins. The other domestic animals play a secondary but significant rôle. Tabulated from the *Indian Veterinary Journal* of September, 1944, the figures loom as follows:

Cattle	166,000,000
Buffalo	47,000,000
Goats	61,950,000
Sheep	50,890,000
Poultry	190,000,000
Horses	2,244,000
Mules	76,000
Donkeys	1,983,000
Camels	993,000
Swine	2,777,000
 Total	 523,913,000

The annual take of marine, estuary, and back-water fish is given as more than 960,000,000 lb., in addition to sizable amounts of fresh water fish. Wool, hides, skins, fresh meat, milk, and milk products, run into tremendous sums. Yet, because animal diseases are not systematically controlled and veterinarians are largely ignored, the Indian people derive but little social advantage from this abundance of farm animals.

Peru

At the November meeting of the Asociacion de Medicos Veterinarios del Peru, Lt. Col. Russell McNellis of the U. S. Military Mission to Peru presented a paper and discussed "La prueba de Tuberculina en el Ganado Vacuno" (The Tuberculin Test in Cattle). Dr. Aurelio Malaga, president of the Association and a member of the AVMA, presided at the meeting which was held in the newly organized National Veterinary School of Peru. In addition to association members, a number of invited guests attended the meeting.

Russia

The Longest Livestock Drive.—More than a million cattle, sheep, and goats were driven overland more than a thousand miles to restock liberated territory of the Ukraine, Smolensk, Leningrad, *et al.*, following the historic retreat of the German legions. The government mobilized some 25,000 men and women for this greatest livestock drive of all times. Plans for the great trek, down to the minutest detail, were made as carefully as for a gigantic military operation.—*From the Veterinary Record.*

STATE BOARD EXAMINATIONS

West Virginia—The West Virginia Veterinary Board will hold its next examination at the Hotel Gore, Clarksburg, W. Va., April 9, 1945, at 9:00 a.m. For further particulars, address: W. E. Trussell, Charles Town, Jefferson County, W. Va. secretary.

VETERINARY PROFESSION AND THE WAR**Relisting of Essential and Critical Activities by WMC**

The War Manpower Commission announced on Jan. 16, 1945, a list of essential and critical activities to be used as a guide by Selective Service in the induction of men in the 26 through 29 age group to meet the manpower needs outlined previously by War Mobilization and Reconversion Director Byrnes. The list includes 35 categories or groups agreed upon by representatives of the Army, Navy, Selective Service, War Production Board, and War Manpower Commission.

Reproduced below is the listing of health and welfare services as it appeared in the official release of January 16. All services listed are essential, but those printed in capital letters are critical activities. All technical, scientific, and research personnel engaged in any of the activities in the list are regarded as being engaged in critical work whether or not the activity appears in capital or small letters.

"32. Health and Welfare Services.—PHYSICIANS, SURGEONS, DENTISTS, OCULISTS, OSTEOPATHS, podiatrists (chiropodist), SANITARY ENGINEERS, and VETERINARIANS (ENGAGED IN TREATMENT OF FARM LIVESTOCK); offices of the preceding professions; MEDICAL, DENTAL AND OPTICAL LABORATORIES; PHARMACEUTICAL SERVICES; HOSPITALS; NURSING SERVICES; INSTITUTIONAL CARE; mortuary services; auxiliary civilian welfare services to the armed forces; welfare services to civilians; church activities; accident- and fire-preventive services; structural pest control services."

BIRTHS

To Dr. (O.S.U., '43) and Mrs. S. D. Sachs, 643 Euclid Ave., Akron 6, Ohio, a daughter, Jo Ann, Jan. 26, 1945.

DEATHS

Roy R. Clark (KCVC, '05), Williamsburg, Va., died April 4, 1944. Dr. Clark was admitted to the AVMA in 1906.

James E. Helyar (Corn., '38), 33, Meadville, Pa., died Jan. 12, 1945. Dr. Helyar was in charge of veterinary and sanitary inspection work for the Rieck-McJunkin Dairy Co., of Pittsburgh at the time of his death. He had been a member of the AVMA since 1940.

Theodore S. Rich (Ont., '91), 77, Lansing, Mich., died Dec. 13, 1945. Dr. Rich won recognition in the field of bovine tuberculosis during his thirty-five year career with the BAI. He had been a member of the AVMA since 1906.

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